UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SENT VIA EMAIL

REPLY TO THE ATTENTION OF:

May 10, 2011

Mr. Steve Quigley, P.E.
Principal-in-Charge/Project Manager
Conestoga-Rovers & Associates Ltd. (CRA)
651 Colby Drive
Waterloo, Ontario N2V 1C2

RE: EPA Comments on Revised Streamlined Remedial Investigation/Feasibility Study Report, Operable Unit 1
South Dayton Dump and Landfill Site, Moraine, Ohio

Dear Mr. Quigley:

The United States Environmental Protection Agency (EPA) has completed its review of Conestoga Rovers and Associates' (CRA's) revised Streamlined Remedial Investigation/Feasibility Study Report for Operable Unit 1 (OU1 RI/FS) for the South Dayton Dump and Landfill Site in Moraine, Ohio.

The revised OU1 RI/FS still contains several deficiencies, and cannot be approved by EPA. Many of the deficiencies concern comments EPA provided to CRA on July 7, 2010 on the draft OU1 FS that you did not dispute, as well as agreements made as part of the December 15, 2010 Dispute Resolution Agreement.

EPA's comments on the revised OU1 RI/FS are attached. Also attached, are comments the Ohio Environmental Protection Agency (OEPA) submitted to EPA on the revised OU1 RI/FS. Due to time constraints, and the number of outstanding comments, EPA was not able to integrate OEPA's comments and EPA's comments into a single comment document. However, EPA has reviewed and fully supports OEPA's comments, which must also be addressed in the final OU1 RI/FS Report.

The majority of EPA's and OEPA's comments are the same comments the agencies provided you with over the past several weeks, and central around the same issues that we have been discussing with you during our weekly calls. However, these final sets of comments note some additional previous comments that CRA did not address in

the revised report, and also expand on some of the issues that EPA and OEPA have been discussing with your further.

EPA's and OEPA's comments on the OU1 RI/FS must be thoroughly and appropriately addressed in a final OU1 RI/FS Report, and resubmitted to EPA and OEPA for final review and approval. Section X of the 2006 Administrative Settlement Agreement and Order on Consent (ASAOC), Docket No. V-W-06-C-582, allows the Respondents up to 21 days to revise and resubmit the the final OU1 RI/FS Report. Due to the extensive revisions that are still required, however, as well as the work CRA will need to do to complete the revised Vapor Intrusion Study Work Plan; and, in the hope that this will result in a final OU1 RI/FS Report that can be approved, EPA is willing to allow the Respondents until Friday, June 10, 2011, to submit the final OU1 RI/FS Report to EPA and OEPA.

Pleased be advised, however, that if EPA's subsequent review of the OU1 RI/FS Report indicates that the final OU1 RI/FS is still deficient, EPA will consider it's enforcement options for completing the RI/FS consistent with Section X of the ASAOC, including EPA's option to modifiy the document.

Finally, EPA would again like to remind CRA that providing EPA with deliverables that clearly address EPA and OEPA comments, that are defensible, and that are consistent with EPA guidance and actual Site conditions, will significantly reduce the amount of time EPA and OEPA spend reviewing and commenting on these documents, which becomes costly on future oversight bills.

If you have any questions or would like to discuss any of EPA's or OEPA's comments further, please feel free to contact me at cibulskis.karen@epa.gov or 312-886-1843. Legal questions should be directed to Tom Nash, the site attorney, at nash.thomas@epa.gov or at 312-886-5122.

Sincerely,

Karen Cibulskis

Karen Cibulskis
Remedial Project Manager

cc: Ken Brown, ITW
Laura Marshall, OEPA
Tim Prendiville, SR-6J
Tom Nash, C-14J
Brett Fishwild, CH2M

EPA COMMENTS ON
REVISED STREAMLINED REMEDIAL INVESTION/FEASIBILITY STUDY
REPORT FOR OPERABLE UNIT 1 (OU1)
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, OHIO
JANUARY 2011

NOTE: Page references are based on the PDF version of the report.

1. July 2010 Comment 2. Modifications acceptable – as long as implications of ponded water and/or leachate in these areas which are within the MSW-capped area are addressed later in FS, including specifics.

(ORIGINAL COMMENT) Page 1, Section 1.0, Introduction, Paragraph 2, Line 3. During CRA's monthly monitoring that started in July, 2008, the Large Pond had water in it in August, September and December 2008; April 2009; and in all months from June 2009 to April 2010. This is not exactly a "vernal" (spring) pond. Also, the Small Pond had water in it in August, 2008, April and June 2009, and in January, February and March 2010. Again, while intermittent, the Small Pond is not "vernal".

CRA's RI (page 104) states that the Large and Small Ponds are fed by groundwater and rise and fall with groundwater levels. This is consistent with flow maps, which indicate there is a difference of less than 0.5 feet between the water elevation in the Large Pond and the water levels in the 2 nearest wells located 200 and 300 feet from the Large Pond; and a little more than 0.5 feet between water level in the Small Pond and the water level in the nearest well located about 100 feet from the Small Pond. Since the Large and Small Ponds are in direct communication with the water table, this may have implications for the remedial design (e.g., underground drains).

Please change these lines as follows: "...15-acre Quarry Pond, ~~and two small ponds~~ a small intermittent pond, and a larger, 1-acre pond that is mostly wet but occasionally dry."

2. July 2010 Comment 3. Not Addressed on Page 1, Section 1.0, Introduction, Paragraph 2. Information about soil gas added, but information about other media deleted. Keep information about soil gas and re-insert revisions requested in July:

> "Waste material and soil at the Site contains volatile organic compounds (VOCs), including, but not limited to, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE),vinyl chloride and benzene; semivolatile organic compounds (SVOCs), including, but not limited to, polynuclear

aromatic hydrocarbons (PAHs) and naphthalene; polychlorinated biphenyls (PCBs); and metals, including lead, copper, ~~and~~ arsenic, and other inorganic chemicals. ~~Portions of the~~ The groundwater aquifer underlying the Site ~~have~~ has also been contaminated by ~~these chemicals~~ VOCs, arsenic and lead, as well as some of the other chemicals detected in the landfill."

(ORIGINAL COMMENT): Page 1, Section 1.0, Introduction, Paragraph 2, Lines 6 to 9. The statements that the waste material and soil at the Site "contain metals, including lead, copper, and arsenic, and other chemicals," and that "portions of the groundwater aquifer underlying the Site have also been contaminated by these chemicals" is misleading. The primary (but not only) groundwater contaminants at the Site are volatile organic compounds (VOCs), which were also detected at high concentrations in landfilled materials and soil gas across the Site.

Also, it is not appropriate to indicate that only "portions" of the groundwater beneath the Site are contaminated. CRA did not characterize the full extent of on-Site groundwater contamination; and EPA did not require a full groundwater characterization since this is not necessary to support EPA's presumptive remedy for the Site. See the discussion below, and revise these sentences in the FS as follows:

"Waste material and soil at the Site contains volatile organic compounds (VOCs), including, but not limited to, trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE),vinyl chloride and benzene; semivolatile organic compounds (SVOCs), including, but not limited to, polynuclear aromatic hydrocarbons (PAHs) and naphthalene; polychlorinated biphenyls (PCBs); and metals, including lead, copper, ~~and~~ arsenic, and other inorganic chemicals. ~~Portions of the~~ The groundwater aquifer underlying the Site ~~have~~ has also been contaminated by ~~these chemicals~~ VOCs, arsenic and lead, as well as some of the other chemicals detected in the landfill."

The primary VOC groundwater contaminants at the Site are chlorinated solvents, including trichloroethene (TCE) and its breakdown products cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride; and benzene.

Site records indicate that chlorinated solvents, including 1,1,1-trichloroethane, which can break down into TCE and other degradation products, was disposed at the Site. In 2000, a composite sample from 5 drums removed from a limited excavation at Valley Asphalt also contained 64,000 ug/Kg of TCE and 840 ug/Kg of vinyl chloride.

CRA's 2008 test trench/test pit data - which does not characterize the full extent of contaminant concentrations detected in the landfill - confirms the landfill contains unacceptable levels of chlorinated solvents.

At four locations (test trenches TT8, TT9, TT21 and TT22), vinyl chloride was detected in the landfill material at concentrations above non-conservative EPA soil screening values for groundwater protection based on a cancer risk of 10^{-4} and a dilution attenuation factor (DAF) of 10. The maximum concentration of vinyl chloride was detected within 7 feet of the water table and was 490 ug/Kg (TT-21, 21 ft-bgs). This concentration of vinyl chloride is 87 times greater than the non-conservative EPA soil screening value for groundwater protection for vinyl chloride, which is 5.58 ug/Kg. See Table 1.

Tetrachloroethene (PCE), another chlorinated solvent which can degrade into TCE and other breakdown products, was detected above non-conservative soil screening values for groundwater protection based on maximum contaminant levels (MCLs) and/or a cancer risk of 10-4 with a DAF=10 in TP-3 and TT-20. The maximum concentration of PCE was 2,500 ug/Kg, and was detected at 7 ft-bgs in TT20. This concentration is 50 times greater than the non-conservative soil screening value for groundwater protection based on a cancer risk of 10-4 and a DAF=10 (screening level 49.2 ug/Kg); and 113 times greater than PCE screening levels based on EPA maximum contaminant levels (MCLs) and a DAF=10 (screening level 22 ug/Kg).

TCE, another significant groundwater contaminant at the Site, was also detected in landfill materials above non-conservative 10^{-4} cancer risk screening levels for groundwater protection with a DAF=10. The maximum concentration of TCE was detected within 7 feet of the water table at TT21, and was 790 ug/Kg. The non-conservative soil screening level for TCE for groundwater protection based on a cancer risk of 10-4 and a DAF=10 is 717 ug/Kg. TCE was also detected above the MCL soil screening value based on a non-conservative DAF=10 at TT7, TT9, TT19, TT20 and TT23. The TCE concentrations in these test trenches ranged from 29 to 670 ug/Kg, and the MCL soil screening level for TCE for groundwater protection is 17.9 ug/Kg.

Cis-1,2-DCE, another significant VOC detected in on-Site groundwater, was also detected in landfill materials above non-conservative EPA soil screening levels for groundwater protection equal to a hazard index (HI) of 1 and/or MCLs using a DAF=10 at test trench TT21 and TT9. The maximum concentration of cis-1,2-DCE was 1,400 ug/Kg, and was detected within 7 feet of the water table at TT21. The concentration of cis-1,2-DCE in TT9 ranged from 330 to 890 ug/Kg, and was detected from 7 to 22 ft-bgs. The soil screening level for groundwater protection equal to a HI of 1 using a DAF=10 is 1,070 ug/Kg for cis-1,2-DCE; and the MCL soil screening level using a DAF=10 for cis-1,2-DCE is 206 ug/Kg.

Chlorinated solvents were also found above more conservative soil screening values for groundwater protection (e.g., a cancer risk of 10^{-5} or 10^{-6} with a DAF=1) in nine other test pits/test trenches: TP2, TP3, TP4, TP5, TP6, TT5, TT10, TT11 and TT12; making chlorinated solvents present in 17 out of 28 SDDL test pit/test trench locations.

CRA's 2009 soil gas data also indicates the widepread presence of chlorinated solvents at the Site. Vinyl chloride was detected above EPA's Office of Solid Waste and Emergency Response (OSWER) 10^{-4} cancer risk soil vapor criteria (non-conservative) at 6 out of 21 on-Site soil gas probe locations (see Figure 2 in Attachment 3). TCE was detected above 10^{-4} soil vapor criteria (non-conservative) at 8 out of 21 on-Site gas probe locations. Cis-1,2-DCE was also detected above OSWER soil vapor criteria equal to a hazard index of 1 at three on-Site gas probe locations. Chlorinated solvents were detected above more conservative OSWER soil vapor criteria (10^{-5} or 10^{-6} cancer risk) at eight other locations; making chlorinated solvents present in 19 out of 21 on-Site gas probe locations.

The highest concentration of chlorinated solvents was detected in landfill gas probe GP20-09. TCE was detected in GP20-09 at a concentration of 56,000 ug/m^3, which corresponds to a cancer risk of 2×10^{-1}. CRA resampled GP20-19 in January 2010, and the concentration of TCE was 16,000 ug/m^3, which still corresponds to a cancer risk of 7×10^{-2} Cis-1,2-DCE was also detected in GP20-09 at a concentration of 16,000 ug/m^3, which corresponds to a non-cancer hazard index of 45.

Data from the Valley Asphalt drums and CRA's 2008 test pit/test trench data also indicate the SDDL as a source of benzene. The composite drum sample collected from Valley Asphalt in 2000 contained 7,000 ug/Kg of benzene. Also, a drum sample CRA collected from test trench TT21 in the vicinity of the Valley Asphalt drum removal was Resource Conservation and Recovery Act (RCRA) characteristic for benzene. CRA's drum sample contained 1.1 mg/L of benzene, more than twice the RCRA Toxicity Characterist Leaching Procedure (TCLP) limit for benzene of 0.5 mg/L.

CRA's 2008 test pit/test trench data also shows landfill material at three locations (TP5, TT21 and TT22) contains benzene above soil screening values for groundwater protection based on a non-conservative cancer risk of 10^{-4} and a DAF=10 (see Table 1). The maximum concentration of benzene was 12,000 ug/Kg, which was detected at 7 ft-bgs in TT21. This concentration of benzene is 56 times greater than the 10^{-4} cancer risk soil screening value for benzene, which is 211 ug/Kg.

Benzene was also detected in landfill materials above soil screening values based on MCLs and a non-conservative DAF=10 at TT7 and TT9; and was just below the MCL soil screening value at TP3. The concentration of benzene at these locations was 23 to 150 ug/Kg, and the MCL soil screening value for benzene is 25.6 ug/Kg. Benzene was also present above more conservative screening values (cancer risk of 10^{-5} or 10^{-6} with a DAF=1) in landfill material samples at TP6, TT8 and TT19.

CRA's 2009 soil gas data also indicates the widespread presence of benzene at the Site. Benzene was detected above OSWER 10^{-4} soil vapor criteria (non-conservative) at two on-Site soil gas probe locations (GP01-09 and GP18-09) (see Figure 2 in Attachment 3). Benzene was detected above more conservative OSWER 10^{-5} or 10^{-6} soil gas criteria at five other on-Site locations (GP02-09, GP04-09, GP15-09, GP17-09, GP19-09 and GP21-09). Benzene was also detected in on-Site soil gas at 8 other locations below screening criteria; making benzene present in 16 out of 21 on-Site gas probe locations.

The highest concentration of benzene was detected in landfill gas probe GP18-09. The concentration of benzene in GP18-09 was 14,000 ug/m^3, which corresponds to a cancer risk of 4×10^{-3}.

3. July 2010 Comment 4. Not Addressed. Not added to Section 1.0, Introduction, Page 2, Paragraph 2. Also, in Paragraph 2, Line 4, "the RI/FS" should be "the OU1 RI/FS". (ORIGINAL COMMENT) Section 1.0, Introduction, Page 2, Paragraph 1. The SOW also requires the Respondents to conduct a conventional (i.e., not streamlined) RI/FS, risk assessment and ecological assessment "consistent with the requirements of this SOW" for all Site areas and/or media not addressed by the presumptive remedy, and in all Site areas and/or medial where the Respondents have not clearly indicated that there is a basis for remedial action and that the presumptive remedy approach is appropriate.

Please add the following sentence to the end of this paragraph: "All Site areas and/or media not addressed by the presumptive remedy, and all Site areas and/or media in which it is not clear that there is a basis for remedial action and that a presumptive remedy approach is appropriate, are to be adressed through a coventional (i.e., not streamlined) RI/FS, risk assessment and ecological assessment process."

4. Section 1.0, Introduction, Page 3, Paragraph 3. The March 24, 2010 MW-210 Work Plan and the December 17, 2010 Shallow Groundwater Work Plan have very different objectives and should not be confused. Please revise as follows:

"The Respondents submitted a proposed work plan to USEPA on March 24, 2010. USEPA did not approve the work plan and provided comments on the proposed work plan on October 5, 2010. The Respondents and USEPA discussed and agreed ~~on the scope of the shallow groundwater investigation, including the MW-210 area during the meeting on November 2, 2010~~ that the extent of groundwater contamination at and downgradient of the Site would be further investigated as part of OU2. In the interim, the Respondents agreed to conduct a shallow, water-table groundwater investigation as part of the Respondent's Vapor Intrusion Study, and that the water supply well located 500 feet downgradient from the Site would be sampled as part of this investigation. The Respondents submitted..."

5. Page 3, Footnote 5. Please revise this footnote as follows to provide the complete information:

"The Respondents' January 5, 2007 RI/FS Work Plan included a well log and map showing the location of this well but did not propose to sample the well. The USEPA disapproved the Respondents' Work Plan; and, in it's January 9, 2008 letter, USEPA requested that the Respondents move forward with a FS to evaluate cleanup alternatives to contain groundwater contamination above MCLs or unacceptable risk-based levels at the Site boundary. The Respondents did not agree with this approach, and decided to investigate the groundwater contamination at the Site further before determining which, if any, water supply wells needed to be sampled. The USEPA reportedly confirmed the presence of the potable supply well in October 2009, but, despite USEPA's concerns that the potable supply well might be impacted by Site contaminants, did not collect samples from the supply well ~~and did not advise the Respondents of USEPA's concerns until February 2010~~ because USEPA staff did not have any sampling equipment with them, and the RI/FS field work was being performed by the Respondents. In February 2010, USEPA reminded the Respondents about this well, and requested that the Respondents sample the well. The Respondents proposed to sample the well as part of their March 24, 2010 MW-210 investigation. The USEPA had significant concerns with the Respondents' MW-201 Work Plan (e.g., the Respondents' detection limits were 40 to 100 times higher than drinking water standards), and could not approve this document. In December, 2010 the Respondents proposed to sample this well as part of their shallow, water table groundwater investigation for the vapor intrusion study. USEPA is currently reviewing this work plan along with other Site documents submitted by the Respondents."

6. Section 1.0, Introduction, Page 3, Paragraph 3, Lines 15 and 16, continuing onto Page 4: Some of this information is not correct, please delete

the sentence "The results of the Pahse 1 Groundwater Investigation, completed in accordance with the Final Groundwater Letter Work Plan..." from the OU1 RI/FS and replace with the following text:

> "The Respondents submitted the Phase I Groundwater Report, which included a Phase 2 Groundwater Work Plan, in March, 2009. Following discussions with EPA, the Respondents revised and resubmitted the Phase 2 Groundwater Work Plan on April 13, 2009. EPA approved the Phase 2 Groundwater Work Plan on May 11, 2009 subject to the modifications and comments included in Attachment 1 of EPA's May 11, 2009 letter. EPA's May 11, 2009 letter also included comments on the March 2009 Phase 1 Groundwater Report, that were to be addressed in the final RI/FS Report (now renamed the OU2 Planning Support Document)."

7. Section 1.0, Introduction, Page 4, Bullet 3. EPA does not agree with the statement that "RI groundwater data indicate the presence of off-Site groundwater contamination, both upgradient and downgradient in both the shallow and deeper portions of the aquifer.

Higher levels of "shallow" groundwater contamination were detected in monitoring wells installed beneath the landfill as oppose to off-site areas (e.g., TCE 260 ug/L in MW-210 and 70 ug/L in MW-229 within landfill, but not in any DPL wells). Higher levels of "deeper" groundwater contamination were also detected below the landfill as oppose to off-site areas (e.g., cis-1,2-DCE 650 ug/L and VC 130 ug/L in MW-216B at Site, but only 87 ug/L in DPL MW-221 across the street).

CRA only conducted VAS down to 100 ft-bgs at 13 out of 19 original VAS locations, and did not install groundwater monitoring wells at all locations where groundwater contaminants were detected (e.g., VAS-15 where cis-1,2-DC was detected as high as 150 ug/L and VC was detected as high as 30 ug/L. There is also only 1 on-Site VAS sample that went more than 100 ft-bgs (below about 620 ft-msl) at the 80-acre landfill, although some of the highest levels of groundwater contamination were detected in this boring (e.g, VC at concentrations from 46 ug/L to 26 ug/L from 142 to 197 ft-bgs (elevation 585 to 530 ft-msl).

Also, historic and current groundwater flow maps also indicate that groundwater flow in the vicinity of the former GM site across the river is toward the east due to high levels of pumping and current dewatering systems, not toward the site.

Please revise Bullet 3 as follows: "...The Respondents proposed to include the non-groundwater portion of the Site, excluding the Quarry Pond, in the streamlined FS process, ~~as RI groundwater data indicate the presence of off-Site~~

~~groundwater contamination, both upgradient and downgradient in both the shallow and deeper portions of the aquifer~~ so that a more thorough groundwater investigation could be conducted consistent with the objectives and requirements in the 2006 RI/FS SOW."

8. Section 1.0, Introduction, Page 4, Bullet 6, Lines 1 and 2. This statement is not entirely accurate. Please see March 15, 2010 letter and revise as follows: "USEPA agrees OU1 would encompass Lots 5054, 5171, 5172, 5173, 5174, 5175, 5176, 5177, 5178, 3753, 4423, 4610, 3252 and 3274; and the portions of ~~parcels~~ Lots 3278, 3056, 3057, 3058 and 3275 upon which waste has been placed."

9. Section 1.0, Introduction, Page 4, Bullet 6, Lines 3 and 4. This statement is not entirely accurate. Please see March 15, 2010 letter and revise as follows: "USEPA agrees to allow CRA time to collect additional groundwater data ~~from~~ to confirm Delphi Corporation (Delphi) and DP&L are not the source of the deep groundwater contamination detected below the landfill, and to address other uncertainties associated with deep groundwater at the Site, as part of OU2."

10. Section 1.0, Introduction, Page 4, Bullet 7, continuing onto Page 5. This statement is not accurate. EPA's position was not that the Presumptive Remedy applied to the entire 80-acre Site, including groundwater and areas where municipal solid waste was never disposed. EPA's position was that: 1. The limited data collected by CRA in 2008-2010 was not adequate to support a quantitative risk assessment to evaluate risks. 2. If a quantitative risk assessment cannot be conducted, the presence or absence of hazardous substances at concentrations above screening levels and unacceptable risk levels (i.e., a streamlined risk evaluation) is more appropriate for determining whether or not an area or medium should be addressed as part of a Presumptive Remedy, not whether or not municipal solid waste is present (which CRA's limited investigations did not support with any certainty anyway); and 3. Any uncertainty concerning the exact extent of the area or media to be addressed as part of the Presumptive Remedy beyond the 2006 Site boundary could be addressed through additional sampling now, for later consideration, or during RD/RA.

Please review EPA's February 16, 2010, March 15, 2010 and April 1, 2010 letters and revise as follows: "...The Respondents agree to complete a "streamlined FS" for OU1; however, the Respondents did not agree with USEPA's position that the Presumptive Remedy applied to the entire 80-acre Site, including shallow groundwater ~~and areas where municipal solid waste was never disposed~~."

11. Section 1.0, Introduction, Page 5, Paragraph 4, Lines 4 and 5. Please clarify as follows:

"...the revised OU1 RI/FS Report incorporates the relevant USEPA and Ohio EPA comments provided on July 7 and July 19, 2010, respectively, and the agreed upon outcome of the Dispute Resolution Agreement. Specific discussions concerning comments that were "not relevant" and 2006 SOW remedial action objectives relating to OU1, were outlined in a CRA letter dated January 7, 2010, and discussed further during a conference call on Jaunuary 13, 2011, in CRA email dated January 13, 2011 and in two EPA emails dated January 14, 2011."

12. Section 1.0, Introduction, Page 5, Paragraph 4, Lines 6 and 7. This sentence states the Respondents will provide formal responses to USEPA's comments under separate cover. EPA has not seen this document. Responses detailing how each of EPA's comments are addressed in the revised OU1 RI/FS (as required by the 2006 SOW) would be helpful, but do not substitute for not having revised the report as requested.

13. Figure 1.2. Please revise Figure 1.2 to show the Site boundary and OU1 and OU2 on the more detailed topographic map included in the Dispute Resolution Agreement.

14. Section 1.0, Introduction, Page 6, Lines 5 and 6. Please change "areas or media are not part of OU1" to "areas or media which are not part of OU1."

15. Section 1.0, Introduction, Page 6, Bullet 4: Please change "...parts of Parcels 5177 and 5178 including submerged portions of the Quarry Pond." to "...parts of Parcels 5177 and 5178 not addressed in OU1, including submerged portions of the Quarry Pond."

16. Section 1.0, Introduction, Page 6, Bullets 4 and 5. EPA only agreed to separate out shallow groundwater from deep groundwater as a way to work with the Respondents to at least start doing something to contain some of the groundwater contamination at the Site boundary. However, since all groundwater is now being investigated as part of OU2, and, since there is only one, interconnected aquifer at the Site, with no continuous confining layers between shallow and deep groundwater, as well as slight downward vertical gradients, there no longer appears to be a need for or a readily apparent technical justification for making this distinction (e.g., at VAS-15). Please include a footnote in the OU1 FS after these bullets indicating that the distinction being made between shallow and deep groundwater will be revisited in the OU2 Planning Support Document, and that the appropriateness of any subsequent distinction between shallow and deep groundwater at the Site will be determined as part of the OU2 RI/FS, and then include the appropriate objectives for this in the OU2 planning documents.

17. Section 1.0, Introduction, Page 6, Bullet 8. Surface water and sediment will not really be in the floodplain unless there is a flood event. Also, although this is somewhat indicated in Bullet 2, this bullet should also clarify this includes surface water and sediment in the Quarry Pond. Please revise as follows: "Surface water and sediment outside the OU1 Area (e.g., ~~the floodplain area between the Site and the GMR~~ in the Quarry Pond and in the GMR adjacent to and downstream of the Site)."

18. Section 1.0, Introduction, Page 6, Paragraph 3 (below bullets): This paragraph needs some revision since additional streamlined investigations are not being contemplated. Please revise as follows: "These areas and media are not addressed by the Presumptive Remedy, and are the Site areas and/or media in which it is not clear that there is a basis for remedial action and that a Presumptive Remedy approach is appropriate and will be addressed through a conventional (i.e., not streamlined) RI/FS, risk assessment and ecological assessment process."

19. Section 1.0, Introduction, Page 7, Paragraph 1 and Bullets. EPA never agreed, and the Dispute Resolution Agreement does not specify, that the OU1 RI/FS Report will take into consideration the items listed in these bullets, and those items only. Also, CRA did not indicate, and EPA never agreed, that EPA's July 7, 2010 OU1 FS comments on this section were withdrawn. Please revise as follows: "...takes into consideration the following, ~~as agreed upon in the Dispute Resolution Agreement, dated December 15, 2010~~ including, but not limited, to:" See also comments on specific bullets below, many of which are from or similar to EPA's July 7, 2010 OU1 FS comments.

20. July 2010 Comment 8. Not Addressed on Page 7, Top. Instead, CRA changed bullet to read: "Direct contact risks posed by the contaminants present in this area."

Remedial action is warranted in OU1 not just because of direct contact risks, but also because of risks to groundwater, the river and Quarry Pond, and from landfill gas. Please delete this bullet and revise it as originally requested: "Human health and ecological risks posed by ~~the~~ landfill contaminants ~~present in these areas~~ (streamlined assessment)."

(ORIGINAL COMMENT) Section 1.0, Introduction, Page 4, Paragraph 1, Bullet 1. CRA's Human Health and Ecological Risk Assessments were not conducted in accordance with EPA-approved work plans, and are not consistent with SOW requirements for human health and ecological risk assessments (see SOW Sections 1.2.1; 1.2.1.1 to 1.2.1.7; 3.2 and 3.3). Additionally, CRA did not collect adequate data to support a quantitative human health risk assessment (HHRA)

or ecological risk assessment (ERA). As indicated in the EPA-approved Letter Work Plans, the purpose CRA's 2008-2010 investigations was to collect additional data the Respondents wanted to collect for the feasibility study (FS), or to help address data gaps and provide information to aid in the completion of a FS. EPA never approved the data collection activities in the Letter Work Plans as being adequate for human health or ecological risk assessment purposes. EPA encouraged CRA to undertanke a significantly more intensive and systematic sampling approach in any area of the Site where CRA questioned whether the presumptive remedy was appropriate to support a human health and risk assessment for that area. However, CRA did not do this.

Also, CRA's use of limited data (e.g., one sample, frequently collected without the use of accurate field screening procedures) from several different exposure areas (EAs) across the Site with up to 36 feet of landfill material to calculate one, Site-wide reasonable maximum and central tendency exposure point concentration is flawed. For example, non-detect VOC concentrations in off-Site gas probe GP06-09 at the far southeast corner of the Site are not relevant to workers in on-Site buildings along Dryden Road, which are located more than 2,000 feet away (almost one-half mile), where VOC concentrations were significantly higher and above 1 x 10-4 cancer and/or 1.0 noncancer risk based numbers. Similarly, workers at Valley Asphalt are only exposed to concetrations of hazardous substances at Valley Asphalt, so lower contaminant concentrations in the Quarry Pond area are irrelevant to those workers.

If CRA still believes there are specific areas of the Site where the presumptive remedy may not be appropriate, EPA is still willing to allow CRA a reasonable amount of time during RD, or would like to see CRA start now, to undertake the systematic sampling approach necessary (horizontally and vertically, for all relevant media), to collect the data needed to support a human health and ecological risk assessment for that area. EPA will then consider this data, as appropriate, during RD/RA; or as support for a change in EPA's OU1 Proposed Plan, or ROD; or as a ROD Amendment or Explanation of Significant Difference.

In any case, CRA's unapproved OU1 Risk Assessment still indicates remedial action is warranted at the Site based on on-Site industrial/commercial worker exposure to surface soil (RME HI>1); construction/utility worker exposure to surface and subsurface soil (RME HI>1); and off-Site resident exposure to on-Site shallow groundwater (RME cancer risk>1 x 10-4 and RME HI>1).

Please change Bullet 1 as follows: "Human health and ecological risks posed by ~~the~~ landfill contaminants ~~present in these areas~~ (streamlined assessment)."

21. July 2010 Comment 9. Not Addressed on Page 7, Bullets 2 and 3. See additional comments on Footnote 8 re: hazardous waste below. Delete Bullet 2 ("the nature of the waste...") from the FS; and revise Bullet 3 as follows:

"The applicable or relevant and appropriate requirements (ARARs) specific to the ~~types of waste disposed at the Site~~ remedial action and the remedial alternatives developed for the Site."

(ORIGINAL COMMENT) Section 1.0, Introduction, Page 4, Paragraph 1, Bullets 2 and 3. CRA does not have defensible data to support developing and evaluating capping alternatives based on the "nature of the waste disposed on the various parcels in question" and the "ARARs applicable to the waste". The landfill was licensed as a sanitary landfill (what is now termed a municipal solid waste, or MSW landfill), and operated for over 20 years prior to being regulated. Three of the five samples CRA submitted for toxic characteristic leaching procedure (TCLP) analysis from this 80-acre, mixed waste landfill were also RCRA characteristic: a composite sample from test pits TP1, TP3 and TP4 on Lot 5177; a composite sample from test trenches TT21 and TT22 at Valley Asphalt; and a sample from a drum found in TT21 at Valley Asphalt. However, CRA did not evaluate any RCRA Subtitle C capping alternatives in the FS.

CRA's 2008-2010 investigations and previous data indicate the Site clearly warrants a remedial action. While the landfill may not require a hazardous waste cap (but EPA cannot determine this because CRA did not evaluate any hazardous waste capping alternatives in the FS), EPA's minimum closure requirements for the Site would be RCRA Subtitle D (solid waste) requirements. Also, since OEPA's solid waste requirements are more stringent than RCRA Subtitle D requirements, any final remedy for the Site would also have to comply with state requirements. Moreover, since the Site was a licensed MSW landfill that never underwent closure, OEPA also considers its MSW regulations to be applicable, not just relevant and appropriate.

In Section 2.4.2.1, Landfill Cap, of the FS, CRA indicates that areas outside the formal landfill area - i.e., Lots 3753, 4423, 4610 and 3274 "would not have been the subject of the original [landfill] permit and, given the nature of the materials present on these parcels (i.e., predominantly fill with some CDD and RW) may represent areas where material was placed as clean hard fill to bring the Site to grade rather than actually being part of the landfill proper."

EPA disagrees with CRA's statement for several reasons. See discussion below; delete Bullet 2 ("the nature of the waste...") from the FS; and revise Bullet 3 as follows:

"The applicable or relevant and appropriate requirements (ARARs)

specific to the ~~types of waste disposed at the Site~~ remedial action and the remedial alternatives developed for the Site."

Lot 3274 and Lot 4610

CRA only installed two soil borings on 6-acre Lot 3274 (VAS-13/MW-218A/B and VAS-20 at the very southern line of this lot), and two geoprobe borings on 2-acre Lot 4610 (GP09-09 and GP-10-09). CRA did not collect analytical samples of the landfill material detected in VAS-13/MW-218A/B, even though a photoionization detector (PID) over the landfill material in the MW-218B boring sleeve had a reading of 4.5 parts per million (ppm). CRA also did not collect any analytical samples from the 10 feet of landfill material found in GP09-09 or the 25 feet of landfill material found in GP10-09. Also, the soil gas sample collected from GP09-09 contained 2,000 ug/m^3 of TCE, indicating there may be a source of TCE on this property.

Lot 3753 and Lot 4423

CRA only installed one test trench and one geoprobe boring at 2.57-acre Lot 3753 (TT18 and GP07-09) and one test trench, one soil boring and one geoprobe boring on 3.44-acre Lot 4423 (TT17, VAS-20 and GP08-09). Over 14 feet of landfill material was detected in TT17; over 12 feet of landfill material was detected in TT-18; and over 20 feet of landfill material was found in GP08-09. Both trenches and GP08-09 stopped before encountering undisturbed, native material.

CRA only collected two analytical samples from each trench, and no analytical samples from the landfill material in GP08-09. The test trenches were supposed to be excavated until the limits of fill were reached, but CRA terminated the test trenches before reaching undisturbed, native material.

TT17 contained five PAHs above residential screening levels; benzo(a)pyrene (990 ug/Kg) and arsenic (10.9 mg/Kg) above industrial screening levels; naphthalene (110 ug/Kg) above soil groundwater protection criteria; and other chemicals, including aroclor-1248.

TT18 contained 23 ug/Kg of 1,4-dichlorbenzene; 500 ug/Kg of methylene chloride; arsenic (17.7 mg/Kg) above industrial and residential screening criteria; benzo(a)pyrene (73 ug/Kg) above residential screening criteria; naphthalene (46 ug/Kg) above soil groundwater protection criteria; and other chemicals.

The limited number of visual, and even less analytical, data points on Lots 3753, 4423, 4610 and 3274, combined with the analytical data that was collected from these properties, does not support CRA's statement that the nature of the

materials present on these parcels is predominantly fill with some construction and demolition debris (CDD) and residual waste (RW) that was placed as "clean hard, fill".

Landfill Permit

CRA contends Lots 3753, 4423, 4610 and 3274 were not the subject of the original landfill permit. However, Alcine Grillot's application and license to operate a solid waste disposal site for commercial and industrial waste was submitted in 1968 and covered 45 acres. The 1968 air photo shows that, by 1968, the Valley Asphalt property and the other properties along Dryden Road were already built over. The 1968 air photo also shows the extent of the landfill operations at the time to be fairly consistent with the extent of the landfill area shown as still needing fill material on Alcine Grillot's marked-up tax map; with the photo and map both showing Lots 3753, 4423, 4610 and 3274 as being within this area (subsequently confirmed during the OU1 investigations).

Since Valley Asphalt and the other Dryden Road properties were already built over before 1968, it is unlikely that these properties were the subject of the 1969 license for a 45-acre landfill. However, the total acreage of the landfill operations shown in the 1968 air photo and on the tax map, including Lots 3753, 4423, 4610 and 3274, is approximately 48 acres. This, along with the tax map (which also indicates 25 of the 70-acre landfill has been filled to grade and improved) and the 1968 air photo, indicates that these lots were the subject of the original landfill permit.

22. Page 7, Footnote 8: Even if a site does not accept hazardous waste after 1980, hazardous waste regulations may still be relevant and appropriate if there is hazardous waste at a site. Three of the five samples CRA submitted for toxic characteristic leaching procedure (TCLP) analysis from this 80-acre, mixed waste landfill were RCRA characteristic: a composite sample from test pits TP1, TP3 and TP4 on Lot 5177; a composite sample from test trenches TT21 and TT22 at Valley Asphalt; and a sample from a drum found in TT21 at Valley Asphalt. The composite sample from the five drums removed from Valley Asphalt in 2000 was also RCRA characteristic.

While CRA did not evaluate any RCRA Subtitle C capping alternatives in the FS, this, and other analytical data from the Site, indicates there may be "hot spots", or areas within the landfill with high levels of contamination that may not be reliably contained with a solid waste cap and where treatment or excavation may be more appropriate (see EPA's July 7, 2010 Streamlined Risk Assessments and other comments including Comment No. 82).

CRA only collected 5 samples for TCLP analysis to characterize 80 acres of landfill material up to 35 feet thick, and 3 of these samples (60 percent) were RCRA characteristic. A composite sample from the 5 drums removed from Valley Asphalt in 2000 was also RCRA characteristic. Also, 2 of CRA's RCRA characteristic samples were composite samples. One of the samples was a composite sample from test pits TP1, TP3 and TP4, which are 300 to 950 feet apart from each other. The other sample was a composite sample from test trenches TT-21 and TT-22, which are 175 feet apart from each other. Moreover, CRA never went back to collect additional samples to define the extent of the hazardous waste detected at the site, or to collect TCLP samples in areas where TAL/TCL analyses (which was also limited – about 87 landfill samples from 27 locations total) indicate hazardous waste may be present (e.g., including, but not limited to, TP-5, TT-5, TT-8, TT-9 and TT-23; as well as locations where high soil gas concentrations and/or groundwater further indicate hazardous waste may be present, including, but not limited to: GP-1, GP-13, GP-15, GP-18, GP-19, GP-20, VAS-9).

As such, CRA's statements in Footnote 8 that the RCRA characteristic hazardous waste samples from the site are "worst-case conditions" in "discrete isolate locations and are not representative of the Site as a whole" and that the soil and groundwater at the Site have been "extensively characterized" are suspect, and need to be removed from this document. CRA also states that the history of this Site has been "extensively reviewed"; however, as CRA is aware, any records for the Site are extremely limited. Further, if CRA really believes the groundwater at the Site has been "extensively characterized", why is CRA planning to conduct a more thorough, comprehensive groundwater investigation in accordance with the 2006 SOW instead of just remediating the contaminated groundwater?

Please revise Footnote 8 as follows:

"As the Site did not accept hazardous waste after 1980, it is therefore, not a regulated hazardous waste landfill. CRA employed a judgment-based approach to ~~sample~~ sampling during the streamlined investigation in accordance with the Quality Assurance Project Plan (QAPP). ~~Although~~ Three out of five samples collected from the Site that were analyzed in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) had concentrations of analyzed parameters greater than their respective criteria, and indicate that additional characterization is needed in these, and other potential "hot spot" areas, to confirm that these are "worst-case" conditions at the Site ~~are~~ in discrete, isolated locations, and ~~are~~ that they are not representative of the Site as a whole. ~~The history of the Site has been extensively reviewed and the soil and groundwater at the Site extensively characterized, and~~ Although the Site ~~is~~ may not be a hazardous waste landfill, hazardous waste regulations may still be relevant and

appropriate for some of the waste material at the Site and, in some areas, treatment or excavation may be more appropriate."

23. Page 7, Section 1.1, Report Organization, Bullet 1: Please revise as follows, since this bullet is misleading and seems to indicate that a comprehensive removal action was undertaken at the Site, which it wasn't, since hazardous waste is still present in this area in TT-21 (in the landfilled materials and sampled drum) and TT-22: "...and a discussion of ~~completed removal actions~~ five drums that were uncovered at Valley Asphalt and removed in 2000."

24. Page 10, Section 1.2.1.2, Hydrogeology, Paragraph 1, Bullet 2: The statement should be revised to: "Till-Rich Zone – a zone of discontinuous low permeability till facies interspersed with sand and gravel facies which acts as an aquitard in some areas."

25. Page 10, Section 1.2.1.2, Hydrogeology, Paragraph 1, Bullet 3: Please remove the term "upper" from the statement: "...consisting of lower portion of the *upper* saturated glacio-fluvial sand and gravel facies".

26. Page 10, Section 1.2.1.2, Hydrogeology, Paragraph 2, Last 2 Sentences: Add text regarding the Upper and Lower Aquifer Zones to reflect the uncertainty of the boundary between them. Suggested addition: "Because of the stratigraphic variation of the till rich zone both vertically and laterally, the implied 675 ft AMSL boundary between the Upper and Lower Aquifer Zones is approximate and may vary in elevation across the Site."

27. Page 10, Hydraulic Conductivity: The ranges of hydraulic conductivities are given for the Upper and Lower Aquifer Zones, then the geometric mean for each zone is given. The use of the geometric mean does not appear to be appropriate; when trying to characterize the hydraulic conductivity over the site the arithmetic mean appears more appropriate. Please revise.

28. Page 11, Groundwater Flow Direction and Horizontal Gradients, Paragraph 3: The last sentence states that east of the Site groundwater flow direction in the Upper Aquifer Zone would be unaffected by the GMR and flow would be predominantly to the south-southwest. This statement is not supported by the groundwater elevation contour maps presented in Appendix B. For the months of high river levels (February, April, and May 2009 and March 2010) there are no shallow wells east of the site to demonstrate this. Contours showing flow to the southwest or southeast along Dryden Road are not based on any site shallow wells in the northern half of the site, rather the contouring software appears to be improperly using the Dryden Road Bridge gauge as a point source elevation (it represents the surface of the river rather than a point). Also, MW-208, which is located next to Dryden Road along the eastern Site boundary, showed groundwater elevation response to high river levels: 710.46 ft MSL in

April 2009, 711.29 ft MSL in May 2009, both high river months; by July 2009 the groundwater elevation in MW-208 had dropped to 709.49 ft MSL. These facts show that groundwater east of the Site could be affected by high river levels.

29. Page 12, Section 1.2.1.3, Hydrology. This section must include at least some discussion regarding the ponds on the site and surface drainage, since these factors will be taken into account in the streamlined FS. Frequency of flooding should also be discussed, as flooding will affect selected remedy.

30. Page 12, Section 1.2.1.3, Hydrology. Please reference and include a copy of RI Figure 3.13, Floodway and Floodplain Map in the OU1 RI/FS.

31. Page 12, Section 1.2.1.3, Hydrology. Please revise this section to include a discussion of GMR flood events (and include topographic mapping showing where flood levels would reach) as requested in EPA July 7, 2010 Comment 117, which was not addressed in the revised report. According to the RI/FS Work Plan, various flood elevations applicable to the Site are:

Normal Pool: Elevation North of Dryden 713 ft-msl; South of Quarry Pond 709 ft-msl.

10 Year Flood: Elevation North of Dryden 729 ft-msl; South of Quarry Pond 726 ft-msl.

50 Year Flood: Elevation North of Dryden 733 ft-msl; South of Quarry Pond 730 ft-msl.

Although the RI/FS Work Plan provided a range of elevations for "North of Dryden" and "South of Quarry Pond", an examination of the actual source document shows the data collection point used to determine the "North of Dryden" flood elevation is just up-stream of the small dam that is just east of Dryden and the "South of Quarry Pond" flood elevation data collection point is less than 100 feet from the southern boundary of the Site. Please indicate the location of these data points more specifically in the text or show them on a map, so they are not just some unknown distance "North of Dryden" or "South of Quarry Pond".

32. Section 1.2.2, Site History, Pages 13 and 14, License Period/Wastes Permitted. The "1977 Modification" was deleted from the OU1 RI/FS. Please add this back into the document: "Garbage/putrescible waste or other solid waste requiring daily cover must be rejected; fly or bottom ash may be accepted if covered daily or kept moist."

33. July 2010 Comment 15. Not Addressed on Page 14, Section 1.2.2.1, Nature and Extent of Impact and Waste Material. CRA did not address

Comment 15 in the revised text. See original comment below and revise as follows:

> This section presents a ~~detailed summary~~ visual description of the ~~nature of the~~ waste material that was ~~brought onto the various portions of the Site as backfill~~ encountered at investigated locations at the Site, ~~and a discussion of associated contaminants~~ a summary of the chemical data at sampled locations, and a streamlined assessment of associated risks. This discussion is based on a review of historic documents, a review of aerial photographs (as detailed above) and ~~several intrusive~~ 2008-2010 investigations, including borehole advancement, test pit and test trench excavation, soil vapor probe installation, and soil, groundwater and soil vapor sample collection."

(ORIGINAL COMMENT) Page 8, Section 1.2.2.1, Nature of Backfilled Material, Paragraph 1. See Comment Nos. 1, 3, 4 and 9. Characterizing the nature of the waste material based solely on CRA's visual observations in a limited number of test pits, trenches and soil borings, without any acknowledgement of the limited analytical data available at these locations, is not a key factor in implementing the presumptive remedy; and this entire section must be deleted or revised.

The landfill operated without a license for more than 20 years, and then was a licensed MSW landfill. The limited visual, and even more limited analytical data CRA collected, characterizes only a fraction of the heterogeneous waste materials in the 80-acre landfill. Also, consistent with EPA's presumptive remedy guidance, the horizontal and vertical extent of the hazardous substances CRA did detect in the landfill (frequently above 1×10^{-4} and HI=1 risk levels, and even above RCRA TCLP levels) has not been characterized.
CRA's 2008-2010 investigations and previous data indicate the Site clearly warrants remedial action consistent with the scope of the streamlined OU1 FS outlined in EPA's January 9, 2008 letter. Because this is a landfill, with unacceptable levels of groundwater and landfill gas contamination, EPA's minimum closure requirements for the Site would be RCRA Subtitle D (solid waste). Also, since OEPA's solid waste requirements are more stringent than RCRA Subtitle D requirements, any final remedy for the Site would also have to comply with state requirements. The Respondents had over 2 years to collect additional data to defensibly demonstrate if there were any areas of the landfill where there was not a basis for solid waste capping (consistent with SOW requirements); but did not.

In any case, CRA's unapproved OU1 Risk Assessment still indicates remedial action is warranted at the Site based on on-Site industrial/commercial worker exposure to surface soil (RME HI>1); construction/utility worker exposure to surface and subsurface soil (RME HI>1); and off-Site resident exposure to on-

Site shallow groundwater (RME cancer risk>1 x 10-4 and RME HI>1).

Revise this section as follows:

1.2.2.1 Nature of ~~Backfilled~~ Landfilled Material and Streamlined Risk Assessment

"~~The nature of the material backfilled on the Site is a key factor in identifying data gaps and implementing a presumptive remedy~~. This section ~~presents a summary~~ provides a visual description of the ~~nature of the material that was brought onto the various portions of the Site as backfill~~ type(s) of landfill materials encountered at investigated locations at the Site, a summary of the chemical data at sampled locations, and a streamlined assessment of associated risks.

34. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Page 15, Paragraph 1. This section must be revised to clarify that these classifications are based on CRA's comparison of visual observations at investigated locations to OAC definitions, especially since some of the material is RCRA characteristic hazardous waste. Please revise as follows:

"The waste described in the stratigraphic logs includes waste ~~consisting of~~ visually identified as municipal solid waste (MSW), industrial solid waste (ISW), residual waste (RW) or construction and demolition debris (CDD) based on a comparison of visual observations to the definitions listed in Chapter 3745 of the OAC. Where non-waste fill material (i.e., non-native soil visually free from waste but not necessarily chemically analyzed) was identified, CRA has also noted this is the stratigraphic logs. CRA's basis for the classification of the materials visually observed at the Site at investigated locations is summarized as follows:"

35. July 2010 Comment 17. Not Fully Addressed on Page 16, Paragraph 1, Line 2. Please change "soil free of waste" to "soil visually free of waste".

(ORIGINAL COMMENT) Section 1.2.2.1, Nature of Backfilled Material, Page 9, Table. Please revise the description of Fill in the table as follows: "Non-native soil visually free of waste placed as cover over waste or to fill areas to grade. Available analytical data indicates that, where sampled, this material generally contains significantly less contamination than samples collected from higher intervals (if available)."

36. July 2010 Comment 18. Not Addressed on Page 16, Paragraph 2. Section 1.2.2.1, Nature of Backfilled Material, Page 9, Paragraph 1, Lines 1 and 2: See previous comments and revise as follows: "CRA has divided the Parcels

into groups for discussion based on the sequence of filling, the types of waste and fill ~~placed~~ visually observed at investigated locations, and the general location ~~with respect to type~~ within the Site boundary, as follows:"

37. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Page 16. Please include the acreage of each parcel or, for the embankment areas, the acreage of each portion of each parcel included within the Site boundary; as well as the total acreage for each of the areas classified as "Northern Parcels", "Central Parcels", etc. This information will be needed for the ROD.

38. Section 1.2.2.1, Nature of Backfilled Material, Page 16, Paragraph 3, Sentence 2. Please revise as follows consistent with previous comments: "The nature and extent of the waste ~~disposed~~ visually observed at investigated locations on each of the Parcel groupings along with a discussion of the associated contaminants and potential risks based on a streamlined risk assessment are discussed below."

39. Section 1.2.2.1, Nature of Backfilled Material, Page 16, Footnote 15. Please revise as follows consistent with previous comments: "Throughout the FS, CRA has used the term "waste" to denote material CRA visually identified as solid waste ~~as defined by~~ based on the definition in OAC 3745-27, residual waste ~~as defined by~~ based on the definition in OAC 3745-30, and construction and demolition debris ~~as defined by~~ based on the definition in OAC3745-400, and the term "fill" to denote material CRA visually identified as being "earth...from construction, mining or demolition operations". These classifications are based solely on CRA's visual observations, without consideration to any analytical data, if available, including TCLP sampling. CRA has used the term "filling" to refer to ~~the placement~~ CRA's visual identification of waste or fill material, and the term does not differentiate between the two. "Landfilling" refers to ~~the placement~~ CRA's visual identification of waste only ."

40. July 2010 Comment 20. Not Fully Addressed on Page 17, Paragraph 2, Lines 17 to 22. Please revise as follows: "This characterization is generally consistent with CRA's visual observations at investigated locations during test pit and test trench locations; however, CRA and Valley Ashphalt also identified drums, crushed drums and RCRA characteristic hazardous waste in this area.

(ORIGINAL COMMENT) Section 1.2.2.1, Nature of Backfilled Material, Page 10, Northern Parcels, Paragraph 2, Lines 19 and 20. Please revise to clarify as follows, since high levels of VOCs were detected in landfill material and soil gas on these properties, and material found in buried drums on these properties contained high levels of VOCs and was RCRA characteristic. A sample of landfill material from TT21 in this area also contained 21,000 ug/Kg of PCB aroclor-1254, and a composite sample of gray/black sand/gravel fill from TT21 and TT22

was RCRA characteristic for lead. "...likely primary backfill materials in these areas are ash and residue from landfill burning operations and non-combustible materials mixed with other waste."

41. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 17, Paragraph 3, Sentences 1 and 2. Please revise as follows consistent with previous comments: "Based on CRA's visual observations at investigated locations, MSW, some of which is RCRA characteristic hazardous waste, is primarily present in the northern Parcels, on Parcels 5054 and 5171. ~~Through~~ At CRA's test pit, test trench, borehole, vertical aquifer sampling (VAS) and soil gas probe ~~investigations~~ sampling locations CRA encountered...

42. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 17, Paragraph 3. Consistent with previous comments, please revise as follows: "Drums and crushed drums with RCRA characteristic hazardous waste, and other RCRA characteristic hazardous waste material was also identified at Parcel 5054 (Valley Asphalt)."

43. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 17, Paragraph 4, Line 4. Based on CRA's terminology, it is important to clarify that the embankments are constructed of landfill material. In Line 4, please change "confirms that fill materials" to "confirms that landfill materials."

44. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 18, Paragraph 2: Please add a sentence indicating that the former settling pond is under the large asphalt pile, and that it is unknown if any residual materials from the pond were removed when the pond was filled, or if they are still present below ground surface.

45. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 18, Paragraph 3, Lines 23 and 24: CRA's geophysical investigation, especially considering the analytical data, where available, indicate drums may be present in other areas of the Site as well, not just in the vicinity of the Valley Asphalt Drum Removal. Please revise this sentence as follows: "...geophysical investigation identified a small anomaly in the area of the drum removal (and in other areas of the Site), which may represent an additional drums(s).

46. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 19, Paragraph 3: The UST on Conway Fence property discussions should be moved to the "Dryden Road Businesses" section. Also, a copy of the Conway Fence UST report is attached.

47. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 19, Paragraph 4: It is unclear what soil sample CRA submitted for analyses. Soil

sample VAS-04 in Table 1.4 was analyzed for only VOCs, not the list of analytes listed in paragraph four. A statement should be added that although the arsenic detected in the soil sample may not be related to the petroleum impact, reducing conditions imposed by the aerobic degradation of the released petroleum could be responsible for the dissolution of arsenic into groundwater – arsenic was detected at concentrations 11 – 16.4 ug/L, which exceeds the arsenic MCL.

48. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 20, Paragraph 1, Lines 7 to 9: Please revise as follows to provide more accurate information: "It ~~is likely~~ may be that the concrete pad and scrap metal are the source of the anomalies identified near the location of TT23; however, it is not clear if the scrap metal and concrete pad are the source of the lead (17,700 mg/Kg) detected in landfill materials at this location, as well as the cis-1-2-DCE (16,000 ug/m3) and TCE in detected in soil gas (56,000 ug/m3) at adjacent GP-20.

49. Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 20, Paragraph 2: Please revise as follows consistent with previous comments: "At these 44 locations, a mixture of all the waste types identified in the introduction to this section was ~~present~~ visually identified, with some of the material (TT-21, TT-22 and drums) containing hazardous waste.

50. July 2010 Comment 23. Not Addressed in Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Pages 20 to 23. CRA did not address this comment here, or in Section 1.2.5, Streamlined Risk Assessment; and CRA's revised text uses a variety of inconsistent screening values (some 10^{-6}, some 10^{-4}, some residential), not all of which EPA agrees with. CRA's revisions also do not address landfill materials as a source of groundwater and sediment contamination. These pathways are consistent with the site conceptual model and must be included. Please revise this section to use the following, more appropriate, screening criteria: EPA Regional Screening Industrial Soil Criteria (10^{-6}/HI=1); EPA Regional Screening Protection of Groundwater Soil Screening Levels Risk-Based (10^{-6}/HI=1) and MCL-Based; EPA Regional Screening Level Tapwater Criteria (10^{-6}/HI=1); EPA MCLs; EPA Regional Screening Level Industrial Air Criteria (10^{-6}/HI=1) - adjusted by factor of 10 for soil gas to evaluate potential risks to workers in buildings with foundatations located within five feet of soil gas concentration; and Ecologial Consensus-Based Probable Effects Concentrations (PECs) for landfill samples collected from surface materials, trenches and test pits along and near GMR and Quarry Pond embankments or in Quarry Pond Area (see *Prediction of Sediment Toxcicity Using Consensus-Based Freshwater Sediment Quality Guidelines*, EPA 905/R-00/007, June 2000).

(ORIGINAL COMMENT) Section 1.2.2.1, Nature of Backfilled Material, Northern Parcels, Page 13, Paragraph 2. See Comment No. 16. Please include the following summary of the major contaminants detected in sampled media on

these parcels (Lots 5054, 5171, 5172, 3056, 3057, 3058 and 5177 north of fence line), and associated risk levels as a Streamlined Risk Assessment to document why remedial action on these properties is clearly warranted:

STREAMLINED RISK ASSESSMENT

Industrial Direct Contact Risks: Lead was detected above industrial soil screening criteria equal to a noncancer hazard index (HI) >1 (800 mg/Kg) in nine out of 14 test pits, trenches and other sampling locations in the Northern Parcels: TP5 (Lot 5177 north of fence line); TT5 (Lot 5054 and 3058); TT7, TT21 and TT22 (Lot 5054); TT9 (Lot 5172); TT19 (Lot 3057); TT20 (Lot 3056); and TT23 (Lot 5171). The maximum concentrations of lead were detected in TT5 (14,100 mg/Kg) and TT23 (17,700 mg/Kg). These concentrations correspond to industrial hazard indices of 17 and 22.

Risks from Soil Gas: VOCs were detected above industrial soil gas criteria equal to a cancer risk of 1×10^{-4} and/or a HI=1 at five out of seven gas probes installed on the Northern Parcels: GP01-09 and GP18-09 (Lot 5054); GP15-09 (Lot 5172); and GP19-09 and GP20-09 (Lot 5171). The soil gas criteria were derived by increasing 10^{-4} and HI=1 indoor industrial inhalation regional screening levels by an attenuation factor of 10, using the same methods in OSWER Vapor Intrusion Guidance.

The main chemicals posing the soil gas risks are benzene (14,000 ug/m3 in GP18-09); chlorobenzene (12,000 ug/m3 in GP01-09); napthalene (980 ug/m3 in GP18-09); TCE (19,000 to 56,000 ug/m3 in GP20-09); and vinyl chloride (3,000 to 14,000 ug/m3 in GP15-09, GP18-09 and GP19-09). Based on adjusted inhalation values, these soil gas concentrations correspond to the following potential industrial risk levels for workers in buildings with foundations located within 0 to 5 feet of these concentrations: benzene - cancer risk 8 x 10-4, HI=10; chlorobenzene - HI=5.5; napthalene - cancer risk 2.7×10^{-4}, HI=7; TCE - cancer risk 3×10^{-4} to 9×10^{-4}; and vinyl choride - cancer risk 1×10^{-4} to 5×10^{-4}, HI of 1.1 to 3.2. Note: GP01-09, GP18-09, GP19-09 and GP20-09 were screened within 3 to 5 feet of the ground surface, and GP15-09 was screened 9 to 10 ft-bgs. 1,1-DCA (7,200 ug/m^3) and cis-1,2-DCE (ug/m^3) were also detected in GP15-09, but at concentrations below 10^{-4} and HI=1 risk levels.

Methane was also detected consistently at concentrations greater than the upper explosive limit (UEL) for methane (15 percent methane) at two gas probes on these properties: GP01-09 (23.2 to 28.4 percent methane) and GP18-09 (20.6 to 26.6 percent methane).

Risks to Groundwater: VOCs, SVOCs, PCBs, arsenic and/or lead were detected in landfill material above soil criteria for groundwater protection equal to a cancer

risk of 10^{-4} and/or a HI=1 based on a nonconservative DAF=10 in all test pits, trenches and other sampling locations in the Northern Parcels (13/13 locations total). The maximum detected concentrations of these chemicals were:

- Benzene - 12,000 ug/Kg in TT21, potential groundwater risk 5 x 10^{-3}, HI=53;
- Chlorobenzene 47,000 in TT7, potential groundwater risk HI=76;
- PCE - 2,500 ug/Kg in TT20, potential groundwater risk 5 x 10^{-3}, HI=2.5;
- TCE - 790 ug/Kg in TT21, potential groundwater risk 1 x 10^{-4};
- Vinyl chloride - 490 ug/Kg in TT21, potential groundwater risk 8 x 10^{-3}, HI=2;
- Arsenic - 38.8 ug/Kg in TT7, potential groundwater risk 3 x 10^{-3}, HI=12
- Lead - 17,700 in TT23, risk-based groundwater numbers not available, but concentration 134 times greater than soil groundwater protection criteria based on MCL;
- Aroclor-1254, 21,000 ug/Kg in TT21; potential groundwater risk 2 x 10^{-4}, HI=11;
- Benzo(a)pyrene - 6,000 ug/Kg in TT5, potential groundwater risk 1.7 x 10^{-4};
- Cis-1,2-DCE - 1,400 TT21, potential groundwater risk HI=1.3;
- Napthalene - 19,000 ug/Kg in TT21, potential groundwater risk 4 x 10^{-3}, HI=93.

Two of the four samples CRA collected from the Northern Parcels for TCLP analysis also exceeded RCRA regulatory levels. One of the samples, a composite sample of gray/black sand/gravel fill from TT-21 and TT-22, was RCRA characteristic for lead. The TCLP concentration of lead was 12.2 mg/L, and the RCRA regulatory limit for lead is 5 mg/L. The other sample was a sample of material in a drum in TT-21. This sample was RCRA characteristic for lead (TCLP concentration 6.4 mg/L) and benzene (TCLP concentration 1.1 mg/L, RCRA regulatory limit 0.5 mg/L).

A composite sample from the five drums removed from Valley Asphalt in 2000 were also RCRA characteristic for lead (8.26 mg/L) and cadmium (2.11 mg/L, RCRA regulatory limit 1 mg/L); and contained 7,000 ug/Kg benzene; 64,000 ug/Kg TCE; 75,000 ug/Kg aroclor-1254; and other chemicals.

Groundwater Contaminants: Many of the chemicals detected in the landfill material in the Northern Parcels have been found in shallow and deep groundwater at the Site above 10-4 or HI=1 risk levels or MCLs (see Summary of Site Groundwater at the end of this section). For the purposes of OU1, shallow groundwater is defined as (see EPA's March 15, 2010 letter):

1. Groundwater above any substantial till layer, where it is not readily

apparent that contaminant concentrations below the till are a direct factor or a continuation of the contaminant plume above the till at that location. For example, at VAS-08, VAS-09, VAS-14, EPA agreed the TCE and other contamination above the till could be considered shallow groundwater for the purposes of OU1 (at VAS-08 this would include TCE and other contamination above elevation 675 ft-msl). TCE and other contamination below the till at these, and other similar locations will be considered deeper groundwater to be addressed as part of OU2.

2. The apparent vertical extent of the contaminant plume originating in shallow groundwater, especially where a substantial till layer is not present. For example, at VAS-15, EPA considers shallow groundwater to be down to 681 ft-msl, below which TCE decreases to below MCLs. The cis-1,2-DCE and vinyl chloride below this TCE (elevation 681-641 ft-msl), and what may be an even deeper contaminant plume below that (i.e., below elevation 641 ft-msl where TCE and cis-1,2-DCE increase again) will be considered deeper groundwater to be addressed as part of OU2.

3. Based on current VAS, EPA expects shallow groundwater for the purposes of OU1 to be down to approximately 675 ft-msl (about 30 feet below the water table based on VAS). However, the extent of shallow groundwater requiring remediation at a specific location may be less than elevation 675 ft-msl; e.g., if there is a shallower, substantial layer of till higher in the aquifer as described in Item 1 above (e.g., at VAS-09). Similarly, the extent of shallow groundwater requiring remediation at a specific location could also be greater than 675 ft-msl; e.g., if additional VAS shows a contaminant plume originating in the shallow aquifer similar to the TCE plume in VAS-15, but the contaminant concentrations from this shallow plume do not decrease to below MCLs until deeper in the aquifer.

Landfill contaminants detected in both landfill material and groundwater in the Northern Parcels include:

Benzene: Benzene was detected in groundwater in the Northern Parcels in VAS-1, VAS-2, VAS-5, VAS-6, VAS-8, VAS-14 and MW-219. The maximum concentration of benzene in shallow groundwater in the Northern Parcels was detected in MW-219 during the 01/2010 sampling event, and was 18 ug/L. The MCL for benzene is 5 ug/L.

The maximum concentration of benzene detected in deep groundwater in the Northern Parcels was 0.48 ug/L in VAS-5. This concentration of benzene is below the MCL. However, consistent with the presumptive remedy for the Site, the OU1 investigation was limited; permanent monitoring wells were not installed at all VAS locations; and many wells in the Northern Parcels were installed at the

water table without VAS (i.e., MW-225, MW-226, MW-227, MW-228 and MW-229). This means that the full extent of benzene contamination in groundwater in the Northern Parcels is uncertain. Higher concentrations of benzene were also detected in deep groundwater in other areas of the Site (e.g., 1,100 ug/L of benzene in MW-210B), which will be addressed in OU2.

TCE: TCE was detected in groundwater in the Northern Parcels in VAS-1, VAS-2, VAS-4, VAS-5, VAS-6, VAS-7, VAS-8, VAS-14, MW-208, MW-217, MW-229 and Valley Asphalt Well 1. The highest concentrations of TCE in shallow groundwater in the Northern Parcels were in MW-229 (70 ug/L) and VAS-8 (51 ug/L). The MCL for TCE is 5 ug/L.

The highest concentration of TCE in deep groundwater in the Northern Parcels was 3.5 ug/L in VAS-5. This concentration of TCE is below the MCL. However, consistent with the presumptive remedy, CRA did not install a permanent monitoring well at VAS-5 (or at other VAS locations), or conduct VAS at MW-229 (or at MW-225, MW-226, MW-227 and MW-228). As a result, the actual concentration of TCE at VAS-5 and at other VAS locations, and in deeper groundwater below MW-229 (and below other monitoring wells) is uncertain. Also, higher concentrations of TCE were detected in deep groundwater in other areas of the Site (e.g., 790 ug/L of TCE in VAS-9), which will be further characterized and addressed in OU2.

Cis-1,2-DCE: Cis-1,2-DCE was detected in landfilled materials and is also a degradation product of TCE. Cis-1,2-DCE was detected in groundwater in the Northern Parcels in: VAS-1, VAS-2, VAS-4, VAS-5, VAS-6, VAS-7, VAS-8, VAS-14, MW-208, MW-216, MW-217, MW-219, MW-228, MW-229, and Valley Asphalt Wells 1 and 2. The maximum concentration of cis-1,2-DCE in shallow groundwater in the Northern Parcels was 74 ug/L in VAS-8. This concentration is above the MCL for 1,2-DCE which is 70 ug/L.

The highest concentrations of cis-1,2-DCE in deep groundwater in the Northern Parcels was 87 ug/L in VAS-8, and 650 ug/L in MW-216. The concentration of TCE in MW-216 corresponds to an unacceptable HI=1.75, and also poses additional risks as it degrades to vinyl chloride, which has a higher toxicity than cis-1,2-DCE.

Vinyl Chloride: Vinyl chloride was detected in landfilled materials and is also a degradation product of TCE and cis-1,2-DCE. Vinyl chloride was detected in groundwater in the Northern Parcels in: VAS-1, VAS-4, VAS-5, VAS-6, VAS-7, VAS-8, VAS-14, MW-216, MW-219, MW-227 and MW-228. The maximum concentrations of vinyl chloride in shallow groundwater in the Northern Parcels were in MW-219 (5.8 ug/L) and MW-228 (6.3 ug/L). These concentrations correspond to cancer risks of 3 x 10-4 and 4 x 10-4.

The maximum concentrations of vinyl chloride in deep groundwater on the Northern Parcels was detected in VAS-8 (35 ug/L) and MW-216 (130 ug/L). These concentrations of vinyl chloride correspond to cancer risks of 2 x 10-3 and 8 x 10-3. The vinyl chloride concentration in MW-216 also corresponds to a HI=1.8. The MCL for vinyl chloride is 2 ug/L.

Benzo(a)pyrene: Benzo(a)pyrene was detected at a concentration of 1.0 ug/L in VAS-2, 45-50 ft-bgs. The sample was collected from 0-5 feet below the water table and was 25 feet below the bottom of the landfill at the VAS-2 location. This concentration of benzo(a)pyrene corresponds to a cancer risk of 3 x 10-4 and is above the MCL of 0.2 ug/L for benzo(a)pyrene. Benzo(a)pyrene was not detected in MW-217 installed within 10 feet of VAS-2; however this could be due to differences in the water table elevations and stratigraphy at the MW-217 and VAS-2 locations. For example, the sample where benzo(a)pyrene was detected in VAS-2 was collected just above a till layer that was not present in MW-217, and was below another till layer that was also not present in MW-217. Also, the water table in MW-217 is about 13 feet higher than the water table in VAS-2, and 18 feet higher than the screened interval in MW-217. SVOC concentrations in MW-217 above the screened interval have not been characterized, and could be higher since these intervals are closer to the landfill material. Similarly, the benzo(a)pyrene could be also be migrating preferentially between the two till layers in VAS-2 that are not present in MW-217.

Napthalene: Napthalene was detected in groundwater in the Northern Parcels in VAS-5, VAS-6 and Valley Asphalt Well 2. The maximum concentration of napthalene in shallow groundwater in the Northern Parcels was 15 ug/L in VAS-5. This concentration of napthalene corresponds to a cancer risk of 1 x 10-4 and a HI=2. Consistent with the presumptive remedy, permanent monitoring wells were not installed at VAS-5 or VAS-6, and groundwater samples were not collected from MW-225, MW-226, MW-227, MW-228 or MW-229 for SVOC analysis, so the concentration of SVOCs in these wells is uncertain.

The maximum concentration of napthalene in deep groundwater in the Northern Parcels was 1.6 ug/L in Valley Asphalt Well 2. This concentration of napthalene is below acceptable risk levels; however, deep groundwater will be further characterized in OU2.

PCBs: Consistent with the presumptive remedy, groundwater samples from VAS locations or MW-225, MW-226, MW-227, MW-228 and MW-229 in the Northern Parcels were not analyzed for PCBs. However, groundwater samples from MW-219, a water table well in the Northern Parcel, contained aroclor-1254 at a concentration of 0.051 ug/L, and aroclor-1248 at a concentration of 0.063 ug/L. This concentration is below 10-4 and HI=1 risk levels. However, PCBs were also

detected in shallow and deep groundwater in other on-Site wells (e.g., MW-202, MW-204, MW-215A/B), and the full extent of PCB contamination in on-Site groundwater is uncertain.

Arsenic: Arsenic was detected above acceptable risk levels in shallow groundwater in the Northern Parcels in MW-207 and MW-219. The maximum concentration of arsenic in MW-207 was 17.6 ug/L in July, 2009. This concentration corresponds to a cancer risk of 3.9×10^{-4} and a HI=1.6. The maximum concentration of arsenic in MW-219 was 16.4 ug/L, which corresponds to a cancer risk of 3.6×10^{-4} and a HI=1.5. The MCL for arsenic is 10 ug/L.

Arsenic was detected below MCLs in deep groundwater monitoring wells in the Northen Parcels (deep groundwater data is only available from two locations in the Northern Parcels: Valley Asphalt Well 1/Well 2 and MW-216). The concentration of arsenic in the Valley Asphalt wells was 1.4 to 1.8 ug/L. The concentration of arsenic in MW-216 was 5.9 ug/L, which is below the MCL but corresponds to a cancer risk of 1.3×10^{-4}.

Arsenic was also detected at significantly higher levels in unfiltered shallow and deep groundwater samples in the Northern Parcels at VAS-1, VAS-2, VAS-4, VAS-5, VAS-6, VAS-7, VAS 8 and VAS-14. The highest concentration of arsenic was 550 ug/L in a shallow unfiltered groundwater sample collected from VAS-5. A comparison of available filtered and unfiltered groundwater data collected from some sampling locations and intervals (filtered data is not available for all sampling locations and intervals), indicates that most of the arsenic in the VAS samples may have been sorbed onto particulate matter in the groundwater, instead of dissolved in the groundwater. However, consistent with the presumptive remedy, filtered groundwater data was not collected from all VAS samples to confirm this, nor were permanent groundwater monitoring wells installed at locations where high levels of arsenic were detected and resampled. Also, consistent with the presumptive remedy, several monitoring wells in the Northern Parcels were installed without VAS, and were not sampled for arsenic (e.g., MW-225, MW-226, MW-227, MW-228 and MW-229). As such, the full extent of arsenic contamination in on-Site groundwater is uncertain.

Lead: Lead was detected below MCLs (risk based values for lead are not available) in shallow and deep groundwater in the Northern Parcels in MW-207, MW-208, MW-219 and Valley Asphalt Well 1. The highest concentration of lead was in MW-219 in January, 2010 and was 5.4 to 6.1 ug/L. The concentrations of lead in the other wells were less than 1 ug/L.

Lead was detected at significantly higher levels in unfiltered shallow and deep groundwater samples in the Northern Parcels at VAS-1, VAS-2, VAS-4, VAS-5, VAS-6, VAS-7, VAS 8 and VAS-14. The highest concentration of lead was 1,940

ug/L in a shallow unfiltered groundwater sample collected from VAS-5. A comparison of available filtered and unfiltered groundwater data collected from some sampling locations and intervals (filtered data is not available for all sampling locations and intervals), indicates that most of the lead in the VAS samples may have been sorbed onto particulate matter in the groundwater, instead of dissolved in the groundwater. However, consistent with the presumptive remedy, filtered groundwater data was not collected from all VAS samples to confirm this, nor were permanent groundwater monitoring wells installed at locations where high levels of lead were detected and resampled. Also, consistent with the presumptive remedy, several monitoring wells in the Northern Parcels were installed without VAS, and were not sampled for lead (e.g., MW-225, MW-226, MW-227, MW-228 and MW-229). As a result, the full extent of lead contamination in on-Site groundwater is uncertain.

Risks to GMR: PAHs (S10 EPA and TT5 on Lot 3058), PCBs (S10 EPA on Lot 3058 and TT19 on Lot 3057), and/or lead (TT5 on Lot 3058, TT19 on Lot 3057, and TT20 on Lot 3056) were detected in landfill materials forming the steep embankment in the GMR floodway of the Site in the Northern Parcels above consensus-based probable effects concentrations (PECs) for sediment in all four embankment sampling locations. This indicates the landfill materials in the embankment of the Northern Parcels could pose a risk to the GMR through erosion from surface runoff and flooding. The maximum concentrations of these chemicals and associated PECs on the embankment properties in the Northern Parcels are:

- Benzo(a)anthracene - 7,100 ug/Kg in TT5, six times greater than PEC of 1,050 ug/Kg;
- Benzo(a)pyrene - 6,000 ug/Kg in TT5, four times greater than PEC of 1450 ug/Kg;
- Chrysene - 5,700 ug/Kg in TT5, four times greater than PEC of 1,290 ug/Kg;
- Pyrene - 9,200 ug/Kg in TT5, six times greater than PEC of 1,520 ug/Kg;
- PCBs - 9,400 ug/Kg of Aroclor-1248 and Aroclor-1260 total in TT19, 13 times greater than PEC of 676 ug/Kg;
- Lead - 14,100 mg/Kg in TT5; 971 mg/Kg in TT19; and 3,480 mg/Kg in TT20. Concentrations seven to 110 times greater than PEC of 128 mg/Kg.

In addition, OEPA sediment sample S19OEPA, which was collected from the GMR adjacent to Lot 3058, confirms sediment concentrations in the river adjacent to the Northern Parcels exceed PECs for: benzo(a)pyrene (concentration 1,300 ug/Kg; PEC 1,050 ug/Kg); chrysene (concentration 1,500 ug/Kg; PEC 1,290 ug/Kg), fluoranthene (concentration 2,200 ug/Kg, which is just under PEC of 2,230 ug/Kg), phenanthrene (concentration 1,900 ug/Kg; PEC

1,170 ug/Kg); and pyrene (concentration 2,700 ug/Kg; PEC 1,520 ug/Kg).

Summary: The data collected from the Northern Parcels indicates the landfill materials, soil gas and groundwater in the Northern Parcels pose an unacceptable risk to human health and the environment and should be contained as part of the presumptive remedy. The data also indicates there are some areas within the Northern Parcels that may be hot spots (e.g., TT-21/MW-229; GP18-09/TT-22; GP19-09; GP20-09/TT23; TT-9/GP15-09/VAS-8). These areas will require additional investigation ~~since the nature and extent of contamination in these areas was not evaluated further~~ to confirm that these materials can be reliably contained with a solid waste landfill cap, or whether treatment or excavation may be more appropriate in some areas.

~~Also, during RD, CRA, property owners or other interested parties may conduct additional, systematic sampling with TAL/TCL analysis of the landfill materials, soil gas and groundwater in the Northern Parcels (horizontally and vertically), in accordance with EPA-approved planning documents, to evaluate whether there are any specific areas of the Northern Parcels where the landfill materials, soil gas or groundwater do not pose an unacceptable risk to human health or the environment and may not require containment~~.

51. July 2010 Comment 24. Partially Addressed in Section 1.2.2.1, Nature of Backfilled Material, Central Parcels, Pages 23 and 24. Because MW-204 is right next to the access road and has 24 feet of fill material in it, but CRA did not investigate this further at MW-204 or other locations (e.g., including, but not limited to, MW-203 which is also near the access road and has 13 feet of fill in it), EPA still cannot agree with the statement that "fill material extends right up to the edges of the access road but only small amounts of fill were present on the access road itself, suggesting that it was never excavated." Either remove this sentence from Page 24, Paragraph 1, or revise as follows: "CRA notes that fill material ~~extends~~ has been found right up to the edges of the access road but because, at investigated locations, only small amounts of fill were present of the access road iteself, ~~suggesting that~~ it is uncertain whether or to what extent the access road was ~~never~~ excavated."

(ORIGINAL COMMENT) Page 13, Central Parcels (5177 and 3278), Paragraph 2. The statement that "Based on CRA's review of the aerial photos, it does not appear that any excavation or backfilling occurred along the east-west access road through the center of the site" and the statement that "the results of CRA's investigation suggest this area has not been excavated", conflicts with available data and the later statement in the paragraph that "CRA notes that fill material extends right up to the edges of the access road but only small amounts of fill were present on the access road itself, suggesting that it was never excavated."

Although CRA's figures do not show the entire extent of the access road (e.g., east of MW-203), based on Figure 1.4, Figure 1.16 and the boring/trench logs, landfill materials were encountered on or immediately adjacent to the access road in GP11-09 (12 ft), MW-210 (8 ft), VAS-21 (9 ft), VAS-21B (2 ft), MW-203 (13 ft), TT13 (3.5 ft), VAS-17 (2 ft), SD-002 (4 ft), MW-204 (24 ft), and TT15 (more than 10 feet; trenching stopped at 10 feet due to water table). The only analytical samples that are available are from TT13 and TT15, and TT13 is the only location (out of all the locations) that is clearly on the access road.

CRA did not collect an analytical sample from the landfill material at TT13. However, an analytical sample CRA collected 3.5 feet below the bottom of the landfill material at TT13, contained arsenic and benzo(a)pyrene above screening levels, as well as other PAHs and SVOCs. Also, there are no analytical samples to confirm that areas where landfill material may not be present (e.g., possibly MW-101A) are not impacted.

Please revise the FS figures to show the entire extent of the access road, and revise this paragraph as follows:

> "Based on CRA's review of the aerial photos, it ~~does not appear~~ appears that any excavation or backfilling ~~occurred~~ along the east-west access road through the center of the Site may be limited. The presence of high voltage electrical towers on the Site currently and historically, as evident in aerial photographs dating back to 1956, and the results of CRA's investigation suggest that some parts of this area ~~has~~ have not been excavated (e.g., MW-101A), or are characterized by only a few feet of landfill material (e.g., VAS-21B, TT13, VAS-17 and SD-002). CRA notes that fill material extends right up to the edges of the access road but only small amounts of fill were present on the access road itself, suggesting that it was never excavated."

52. July 2010 Comment 30. Not Addressed on Page 24, Paragraph 2, Lines 25 and 26. RCRA characteristic hazardous waste was found in the only TCLP sample CRA collected from this 25-acre area - in a composite sample from TP-1, TP-3 and TP-4, which are 300 to 950 feet apart from each other. Please revise this sentence as follows for accuracy: "CRA's observations are generally consistent with the available historic information, with the exception that RCRA charcteristic hazardous waste was also found at sampled locations in this area."

(ORIGINAL COMMENT) Central Parcels (5177 and 3278), Page 16, Paragraph 2. See Comment No. 25 and either delete this sentence from the FS or revise as follows: "Thus, the Central Parcels of the Site generally contain ISW, RW, and CDD mixed with other waste, including MSW and hazardous waste."

53. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Central Parcels, Page 25, Paragraph 2, Line 6. Consistent with previous comments, please change "on Parcel 5177" to "at investigated locations on Parcel 5177".

54. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Central Parcels, Page 25, Paragraph 2. RCRA characteristic hazardous waste was found in the only TCLP sample collected from this 25-acre area - in a composite sample from TP-1, TP-3 and TP-4, which are located 300 to 950 feet apart from each other. High levels of methane (as high as 20.5 percent methane in GP-02 and 7.8 percent methane in GP-04/GP-21) also indicate the presence of municipal solid waste (the lower explosive limit for methane is 5 percent methane). Please add the following text to the end of this paragraph to provide more complete information:

"Hazardous waste (RCRA characteristic for lead, 40.6 mg/L) was also identified in a composite TCLP sample collected from TP-1, TP3 and TP-4, and concentrations of methane above the lower explosive limit in GP-02 (as high as 20.5 percent methane) and in GP-04/GP-21 (as high as 7.8 percent) also indicate a source of methane is present."

55. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Central Parcels, Page 25, Paragraph 3, Line 6. Please revise as follows to provide more complete information: "and CDD (brick, concrete blocks), with concentrations of lead as high as 3,970 mg/Kg, extend onto MCD Parcel 3278."

56. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Central Parcels, Page 26, Paragraph 1. RCRA characteristic hazardous waste was found in the only TCLP sample collected from this 25-acre area - in a composite sample from TP-1, TP-3 and TP-4, which are located 300 to 950 feet apart from each other (however, CRA's TCLP data table was not in the RI/FS). High levels of methane (as high as 20.5 percent methane in GP-02 and 7.8 percent methane in GP-04/GP-21) also indicate a source of methane is present (the lower explosive limit for methane is 5 percent methane). Please add the following text to the end of this paragraph to provide more complete information:

"Hazardous waste (RCRA characteristic for lead, 40.6 mg/L) was also identified in a composite TCLP sample collected from TP-1, TP3 and TP-4, and concentrations of methane above the lower explosive limit in GP-02 (as high as 20.5 percent methane) and in GP-04/GP-21 (as high as 7.8 percent) also indicate a source of methane is present."

57. July 2010 Comment 32. Not Fully Addressed on Page 29. As previously requested, on Page 29, Paragraph 2, Lines 6 and 7, please revise as follows since CRA's monitoring shows the Large Pond had water it the whole year from

June 2009 to April 2010 (the last month of monitoring): "...dry up completely ~~during the summer~~ when groundwater elevations and precipitations decline."

(ORIGINAL COMMENT) Central Parcels (5177 and 3278), Page 16, Paragraph 4, Lines 5 to 7. See Comment No. 2. During CRA's monthly monitoring that started in July, 2008, the Large Pond had water in it in August, September and December 2008; April 2009; and in all months from June 2009 to April 2010. Also, the Small Pond had water in it in August, 2008, April and June 2009, and in January, February and March 2010. Please revise Lines 5 to 7 as follows: "The water levels in the Small and Large Ponds rise and fall with groundwater levels, and the ponds dry up completely ~~during the summer~~ when groundwater elevations and precipitations decline. During CRA's monthly monitoring that started in July, 2008, the Large Pond had water in it in August, September and December 2008; April 2009; and in all months from June 2009 to April 2010. The Small Pond had water in it in August, 2008, April and June 2009, and in January, February and March 2010.

58. July 2010 Comment 33. Not Addressed on Pages 26 to 29. Section 1.2.2.1, Nature of Backfilled Material, Central Parcels, Pages 26 to 29. CRA did not address this comment here, or in Section 1.2.5, Streamlined Risk Assessment; and CRA's revised text uses a variety of inconsistent screening values (some 10^{-6}, some 10^{-4}, some residential), not all of which EPA agrees with. CRA's revisions also do not address landfill materials as a source of groundwater and sediment contamination. These pathways are consistent with the site conceptual model and must be included. Please revise this section to use the following, more appropriate, screening criteria: EPA Regional Screening Industrial Soil Criteria (10^{-6}/HI=1); EPA Regional Screening Protection of Groundwater Soil Screening Levels Risk-Based (10^{-6}/HI=1) and MCL-Based; EPA Regional Screening Level Tapwater Criteria (10^{-6}/HI=1); EPA MCLs; EPA Regional Screening Level Industrial Air Criteria (10^{-6}/HI=1) - adjusted by factor of 10 for soil gas to evaluate potential risks to workers in buildings with foundatations located within five feet of soil gas concentration; and Ecologial Consensus-Based Probable Effects Concentrations (PECs) for landfill samples collected from surface materials, trenches and test pits along and near GMR and Quarry Pond embankments or in Quarry Pond Area (see *Prediction of Sediment Toxcicity Using Consensus-Based Freshwater Sediment Quality Guidelines*, EPA 905/R-00/007, June 2000).

(ORIGINAL COMMENT) Central Parcels (5177 and 3278), Page 16: See Comment No. 16. Please include the following summary of the major contaminants detected in sampled media on these parcels (Lot 5177 south of fence line, and Lot 3278), and associated risk levels as a Streamlined Risk Assessment to document why remedial action on these properties is clearly warranted:

STREAMLINED RISK ASSESSMENT

Industrial Direct Contact Risks: Lead was detected above industrial soil screening criteria equal to a noncancer HI=1 (800 mg/Kg) in two out of 10 test pits/trenches and five out of 20 surface soil sampling locations (less than 1 foot deep) in the Central Parcels (Lot 3278 and Lot 5177 south of the fence line): TP3 (1,390 mg/Kg); TT4 (3,970 mg/Kg); S11EPA (811 mg/Kg); S8EPA (1,590 mg/Kg); S3EPA (3,300 mg/Kg); S09EPA (1,990 mg/Kg) and S10OEPA (12,100 mg/Kg). These concentrations correspond to unacceptable industrial hazard indices of 1.1 to 15. Lead was also detected above residential soil screening criteria equal to a noncancer HI=1 (400 mg/Kg) in two other test pit/trenches (TT3 and TP4; lead concentration 426 to 549 mg/Kg), and two other surface soil samples (S7EPA and S08OEPA; lead concentration 474 to 652 mg/Kg).

Copper was detected above industrial soil screening criteria equal to a HI=1 in one test trench (TT4; 43,400 mg/Kg) and one surface soil sample (S10OEPA; 191,000 mg/Kg). These concentrations correspond to unacceptable industrial hazard indices of 1.1 to 4.7. Copper was also detected above residential soil screening criteria equal to a noncancer HI=1 (3,100 mg/Kg) in TP3 (sample concentration 4,030 mg/Kg).

Arsenic, iron, antimony and/or manganese were detected above residential soil screening criteria equal to a noncancer HI=1 in the Central Parcels in test pit/trench samples: TP1, TP2, TP3, TP4, TT3, TT4 and TT15; and in surface soil samples: S1EPA, S3EPA, S9EPA, S02OEPA, S04OEPA, S06OEPA, S08OEPA, S09OEPA and S10OEPA. The maximum concentrations of these chemicals and the associated residential risks are: arsenic - 141 mg/Kg in S08OEPA, HI=6; iron - 124,000 mg/Kg in TT15, HI=2; antimony - 278 mg/Kg in S08OEPA, HI= 9; manganese - 2,200 mg/Kg in TT15; HI=1.2.

Risks from Soil Gas: VOCs were not detected above industrial soil gas criteria equal to a cancer risk of 1×10^{-4} or a HI=1 at the five locations in the Central Parcels where CRA installed gas probes (approximately 1 gas probe per 4 acres, with no data available for large sections of the landfill, consistent with the presumptive remedy). However, methane was consistently detected above the UEL at one gas probe location (gas probe GP20-09; 19.6 to 20.5 percent methane); and above the LEL in two out of three sampling events in both gas probes at another location (7.1 to 7.9 percent methane in GP04-09/GP21-09).

However, benzene, TCE, PCE and/or vinyl chloride were detected in the Central Parcels in all five gas probes (GP02-09, GP03-09, GP4-09/GP21-09, GP05-09 and GP11-09) above 10-6 industrial and residential soil gas criteria (derived by increasing indoor industrial and residential inhalation regional screening levels by

an attenuation factor of 10, using the same methods in the OSWER Vapor Intrusion Guidance, but with more current toxicity values).

The highest concentrations of benzene (110 ug/m^3), TCE (190 ug/m^3) and PCE (610 ug/m^3) were detected in GP3-09. Based on the adjusted regional screening levels, these concentrations correspond to a total industrial inhalation cancer risk of 3 x 10-5 and a total residential inhalation cancer risk of 2 x 10^{-4}. The highest concentration of vinyl chloride (100 ug/m^3) was detected in GP02-09. This concentration corresponds to an industrial cancer risk of 3.6 x 10-6 and a residential inhalation risk of 6.3 x 10-5.

Risks to Groundwater: Arsenic was detected in landfill material above soil criteria for groundwater protection equal to a cancer risk of 10^{-4} and/or a HI=1 based on a nonconservative DAF=10 (screening concentration 1.31 to 3.2 mg/Kg) in all test pits, trenches and surface soil sampling locations in the Central Parcels (30/30 locations total). The highest detected concentrations of arsenic were in S09OEPA (36 mg/Kg), S08OEPA (141 mg/Kg), S06OEPA (49.7 mg/Kg), S9EPA (69.3 mg/Kg), S02OEPA (77.2 mg/Kg), TT4 (57.3 mg/Kg) and TP1 (43.2 mg/Kg). These concentrations of arsenic correspond to potential groundwater risks of 2 x 10^{-3} to 1 x 10^{-2} and a noncancer HI of 11 to 44.

Lead was detected in landfill material above soil criteria for groundwater protection at the MCL based on a nonconservative DAF=10 (135 mg/Kg) in 11 out of 30 sampling locations in the Central Parcels: TP3 (1,390 mg/Kg); TT4 (3,970 mg/Kg); S11EPA (811 mg/Kg); S8EPA (1,590 mg/Kg); S3EPA (3,300 mg/Kg); S09EPA (1,990 mg/Kg) and S10OEPA (12,100 mg/Kg); TT3 (426 mg/Kg); TP4 (549 mg/Kg); S7EPA (474 mg/Kg); and S08OEPA (652 mg/Kg). These concentrations of lead are 3 to 89 times the lead soil criteria for groundwater protection at the MCL.

The composite sample CRA collected from the Central Parcels for TCLP analysis also exceeded RCRA hazardous waste criteria for lead. The sample was a composite sample of black sand fill from TP1, TP3 and TP4. The sample had a TCLP concentration for lead of 40.6 mg/L. This concentration is eight times greater than the RCRA hazardous waste level for lead, which is 5 mg/L.

PCE was detected in landfill material in the Central Parcels above soil criteria for groundwater protection at the MCL based on a DAF=10 (22 ug/Kg) in TP3 (concentration 25 mg/Kg); and above soil criteria for groundwater protection at a risk of 1 x 10^{-4} based on a DAF=10 (49.2 ug/Kg) in S01OEPA (concentration 59 ug/Kg). PCE was also detected in landfill material below these criteria in S8EPA (11 ug/Kg).

Napthalene was detected in landfill material above soil criteria for groundwater protection equal to a HI=1 based on a DAF=10 (204 ug/Kg) at seven locations in the Central Parcels: S1EPA (1,100 ug/Kg), S3EPA (290 ug/Kg), S5EPA (500 ug/Kg), S7EPA (450 ug/Kg), S08OEPA (250 ug/Kg) and TP4 (620 ug/Kg). These concentrations correspond to a potential groundwater noncancer HI of 1.2 to 5. Napthalene was also detected in landfill material at concentrations below this criteria at several other locations in the Central Parcels.

Benzo(a)pyrene (S3EPA and S6EPA) and chlorobenzene (TP3) were detected in landfill material above soil criteria for groundwater protection equal to a cancer risk of 10^{-4} and/or a HI=1 based on a nonconservative DAF=10. The concentrations of benzo(a)pyrene were 4,800 to 5,700 mg/Kg and correspond to a potential groundwater risk of 1.2×10^{-4} to 1.6×10^{-4} . Chlorobenzene was detected at a concentration of 56,000 ug/Kg, which corresponds to a HI=90.

Other chemicals, including benzene (TP3), 1,1-DCA (TP3 and TP4), 1,1,1-TCA (TP2), 1,2-DCE (total) (S8EPA) and TCE (S8EPA) were also detected in landfill material in the Central Parcels below criteria.

Groundwater Contaminants: Many of the chemicals detected in the landfill material have been found in shallow and deep groundwater at the Site above 10-4 or HI=1 risk levels or MCLs. Landfill contaminants detected in both landfill material and groundwater in the Central Parcels include:

Arsenic: Arsenic was detected in shallow groundwater in the Central Parcels above 1×10^{-4} (4.5 ug/L) and/or HI=1 (11 ug/L) risk levels in MW-203, MW-204 and MW-101A. The maximum concentrations of arsenic were detected in MW-203 (33.4 ug/L) and MW-204 (22.3 ug/L). These concentrations of arsenic correspond to cancer risks of 5×10^{-4} to 7×10^{-4} and noncancer HIs of 2 to 3. The MCL for arsenic is 10 ug/L.

Arsenic was detected at significantly higher levels in unfiltered shallow and deep groundwater samples in all VAS samples collected in the Central Parcels: VAS-3 (119 ug/L), VAS-11 (3,200 ug/L), VAS-12 (171 ug/L) and VAS-17 (85.2 ug/L). A comparison of available filtered and unfiltered groundwater data collected from some sampling locations and intervals (filtered data is not available for all sampling locations and intervals), indicates that most of the arsenic in the VAS samples may have been sorbed onto particulate matter in the groundwater, instead of dissolved in the groundwater. However, consistent with the presumptive remedy, filtered groundwater data was not collected from all VAS samples to confirm this, nor were permanent groundwater monitoring wells installed at any of these VAS locations and resampled.

Lead: Lead was detected at low concentrations below MCLs (risk based values for lead are not available) in shallow groundwater in the Central Parcels in MW-103, MW-201 and MW-206. The concentrations of lead in the groundwater samples were less than 1 ug/L and the MCL for lead is 15 ug/L.

Lead was detected at significantly higher levels in unfiltered shallow and deep groundwater samples in all VAS samples collected in the Central Parcels: VAS-3 (203 ug/L), VAS-11 (320 ug/L), VAS-12 (126 ug/L) and VAS-17 (57.9 ug/L). These concentrations of lead are 3 to 21 times higher than the MCL. A comparison of available filtered and unfiltered groundwater data collected from some sampling locations and intervals (filtered data is not available for all sampling locations and intervals), indicates that most of the lead in the VAS samples may have been sorbed onto particulate matter in the groundwater, instead of dissolved in the groundwater. However, consistent with the presumptive remedy, filtered groundwater data was not collected from all VAS samples to confirm this, nor were permanent groundwater monitoring wells installed at any of the VAS locations and resampled.

TCE: TCE has been consistently detected in shallow groundwater in the Central Parcels at concentrations above MCLs and 1 x 10^{-4} risk-based criteria in monitoring well MW-210. The maximum concentrations of TCE in MW-210 were 250-260 ug/L in 1999, 2004 and 2008. These concentrations of TCE are 50 times greater than the MCL (5 ug/L), and correspond to a cancer risk of 1.3 x 10^{-4}.

TCE was found at low levels in the landfill materials in the Central Parcels, and was also found in soil gas samples in the Central Parcels. TCE can also be a degradation product of PCE, which was found in landfill materials above soil criteria for groundwater protection, and in groundwater. TCE can also degrade into vinyl chloride, which has a significantly higher level of toxicity than TCE.

TCE and PCE were detected at low concentrations below MCLs in the Central Parcels in MW-201, MW-103, MW-102 and MW-203 (TCE only). However, these wells were not installed using VAS (or a systematic sampling approach), and may not be located or screened in the maximum zone(s) of contamination. TCE and PCE were also detected below or just above the MCL in shallow groundwater in VAS-11 (TCE 2.8 ug/L; PCE 4.6 ug/L) and VAS-12 (TCE 6 ug/L; PCE 0.33 ug/L); and TCE was detected below the MCL in shallow to deep groundwater in VAS-3 (TCE 2.3 ug/L). TCE was also detected below the MCL in deep groundwater in VAS-11 (0.47 ug/L) and VAS-12 (0.45 ug/L).

Consistent with the presumptive remedy, permanent monitoring wells were not installed at VAS locations where PCE and TCE were detected and resampled; so the actual concentration of TCE and PCE at these locations is uncertain. Also,

consistent with the presumptive remedy, only limited VAS was conducted in the Central Parcels, so most of the groundwater in this area has not been characterized.

Vinyl Chloride: Vinyl chloride can be a degradation product of TCE, and was detected in shallow groundwater in the Central Parcels above 1 x 10^{-4} risk-based criteria and/or MCLs in MW-101A (5.9 ug/L in 2008; highest concentration 180 ug/L in 2002) and MW-203 (1.6 to 3.2 ug/L in 2008/2009). These concentrations are above the MCL for vinyl chloride of 2 ug/L, and correspond to a cancer risk of 1 x 10^{-4} to 3.7 x 10^{-4}. Vinyl chloride was also detected in deep groundwater in the Central Parcels at a concentration of 55 ug/L in MW-210A (cancer risk 3 x 10^{-3}); which may be due to downward vertical flow gradients observed at MW-210 and MW-210A, and at other locations (e.g., MW-215A/B).

Vinyl chloride was also detected in shallow groundwater in the Central Parcels in VAS-11 (5.0 ug/L; cancer risk 3 x 10^{-4}) and VAS-17 (0.85 ug/L; cancer risk 5 x 10-5); and in deep groundwater in VAS-11 (0.29 ug/L; cancer risk 1.8 x 10-5) and VAS-17 (3.8 ug/L; cancer risk 2 x 10-4). Consistent with the presumptive remedy, permanent monitoring wells were not installed at these locations and resampled; so the actual concentrations of vinyl chloride at these locations is uncertain. Also, consistent with the presumptive remedy, only limited VAS was conducted in the Central Parcels, so most of the groundwater in this area has not been characterized.

Cis-1,2-DCE: 1,2-DCE was detected in landfilled materials in the Central Parcels and is also a degradation product of TCE. Cis-1,2-DCE can also degrade into vinyl chloride, which has a significantly higher level of toxicity than cis-1,2-DCE. Cis-1,2-DCE was detected at low levels below MCLs and 1 x 10-4 risk-based criteria in shallow and deep groundwater in the Central Parcels in MW-210/210A (38 ug/L shallow; 1.5 ug/L deep), VAS-11 (5.2 ug/L shallow; 0.41 ug/L deep) and VAS-21 (3.1 ug/L shallow; 42 ug/L deep - not at same interval as MW-210A). Cis-1,2-DCE was also detected in shallow groundwater in VAS-12 (0.66 ug/L) and VAS-17 (0.26 ug/L).

Cis-1,2-DCE was not detected in any other locations. However, except for MW-210/210A/210B, groundwater monitoring wells in the Central Parcels were not installed using VAS, or a systematic sampling approach, and may not be located or screened in the maximum zone(s) of cis-1,2-DCE contamination. Also, consistent with the presumptive remedy, only limited VAS was conducted in the Central Parcels, so most of the groundwater in this area has not been characterized.

Benzene: Benzene was not detected in any of the shallow wells in the Central Parcels, but was detected at a concentration of 1,100 ug/L in deep groundwater

in the Central Parcels in MW-210B. Benzene was also only detected at low concentrations below MCLs and 1 x 10^{-4} risk-based levels in shallow and deep groundwater in the Central Parcels in VAS-3 (0.44 ug/L shallow; 0.27 ug/L deep); VAS-11 (2.4 ug/L shallow; 0.54 ug/L deep), VAS-12 (0.46 shallow) and VAS-17 (0.75 shallow; 0.27 ug/L deep).

Except for MW-210/210A/210B, however, groundwater monitoring wells in the Central Parcels were not installed using VAS or a systematic sampling approach, and may not be located or screened in the maximum zone(s) of benzene contamination. Also, consistent with the presumptive remedy, only limited VAS was conducted in the Central Parcels, so most of the groundwater in this area (shallow and deep) has not been characterized. Also, consistent with the presumptive remedy, permanent monitoring wells were not installed at VAS locations where benzene was detected and resampled; so the actual concentration of benzene at these locations is uncertain.

According to CRA, the source of the deep benzene in MW-210B is from DPL's former leaking underground storage tanks. The maximum concentration of benzene at DPL was 2,600 ug/L in shallow well GW-5, 300 feet northeast of MW-210B. However, the groundwater samples from MW-210B also contained 7.6 ug/L to 12 ug/L of phenol. Phenol was not detected in any of the groundwater samples collected from DPL. Phenol was, however, detected in landfill materials at the Site at a concentration of 970 ug/Kg in TT-7. Landfill material in TT-7 also contained benzene at a concentration of 94 ug/Kg. This concentration of benzene is above soil criteria for groundwater protection at the MCL for benzene based on a DAF=10, which is 25 ug/Kg. This, in conjunction with the limited OU1 investigation at the Site, indicates that the benzene (and phenol) in MW-210 may be from an as of yet undiscovered source in the landfill materials.

Benzo(a)pyrene: Benzo(a)pyrene was detected above MCLs and 1 x 10-4 risk-based criteria in the Central Parcels in VAS-17. The concentration of benzo(a)pyrene was 0.56 ug/L, which is above the MCL of 0.2 ug/L and corresponds to a cancer risk of 1.9 x 10^{-4}. Consistent with presumptive remedy, however, a permanent groundwater monitoring was not installed at VAS-17; so the actual concentration of benzo(a)pyrene at this location is uncertain.

Benzo(a)pyrene was not detected in any other VAS locations or groundwater monitoring wells in the Central Parcels. However, except for MW-210/210A/210B, groundwater monitoring wells in the Central Parcels were not installed using VAS, or a systematic sampling approach, and may not be located or screened in the maximum zone(s) of benzene contamination. Also, consistent with the presumptive remedy, only limited VAS was conducted in the Central Parcels, so most of the groundwater in this area has not been characterized.

Risks to GMR: PAHs, arsenic and/or lead were detected in landfill materials forming the steep embankment in the GMR floodway of the Site above Consensus-Based Probable Effects Concentrations (PECs) for sediment in TT4, TT3 and S08OEPA on Lot 3278 and the lot just south of Lot 3278. This indicates the landfill materials could pose a risk to the GMR through erosion from surface runoff and flooding. The maximum concentrations of these chemicals and associated PECs on the embankment in the Central Parcels are:

- Benzo(a)anthracene – 1,700 ug/Kg in TT4 on embankment; maximum concentration 6,900 ug/Kg in surface soil sample S6EPA 100 feet from embankment. PEC 1,050 ug/Kg;
- Benzo(a)pyrene – 820 ug/Kg in S08OEPA on embankment; maximum concentration 4,800 ug/Kg in surface soil sample S6EPA 100 feet from embankment. PEC 1450 ug/Kg;
- Chrysene - 2,800 ug/Kg in TT4 on embankment; maximum concentration 6,400 ug/Kg in surface soil sample S6EPA 100 feet from embankment. PEC 1,290 ug/Kg;
- Pyrene – 2,400 ug/Kg in TT4 on embankment; maximum concentration 13,000 ug/Kg in surface soil sample S6EPA 100 feet from embankment. PEC 1,290 ug/Kg;
- Arsenic – 141 mg/Kg in S08OEPA on embankment; PEC 33 ug/Kg;
- Lead – 3,970 mg/Kg in TT4 on embankment; PEC 128 mg/Kg.

In addition, OEPA sediment sample S17OEPA collected from the GMR adjacent to Lot 3278 confirms river sediment adjacent to the Central Parcels exceeds PECs for: benzo(a)anthracene (concentration 2,200 ug/Kg; PEC 1,050 ug/Kg); benzo(a)pyrene (concentration 2,100 ug/Kg; PEC 1,450 ug/Kg); chrysene (concentration 2,500 ug/Kg; PEC 1,290 ug/Kg) and pyrene (concentration 4,700 ug/Kg; PEC 1,520 ug/Kg). TCE was also detected in S17OEPA at a concentration of 0.7 ug/Kg.

Summary: The data collected from the Central Parcels indicates the landfill materials, soil gas and groundwater in the Central Parcels pose an unacceptable risk to human health and the environment and should be contained as part of the presumptive remedy. The data also indicates there are some areas within the Northern Parcels that may be hot spots (e.g., TP-1, TP-3, TP-4 and MW-210) ~~since the nature and extent of contamination in these areas was not evaluated further~~ to confirm that these materials can be reliably contained with a solid waste landfill cap, or whether treatment or excavation may be more appropriate in some areas.

~~During RD, CRA, property owners or other interested parties may conduct additional, systematic sampling with TAL/TCL analysis of the landfill materials, soil gas and/or groundwater in the Central Parcels (horizontally and vertically) in~~

~~accordance with EPA-approved planning documents, to evaluate whether there are any specific areas of the Central Parcels where the landfilled materials, soil gas or groundwater do not pose an unacceptable risk to human health or the environment and may not require containment.~~

59. July 2010 Comment 34. Not Addressed on Page 30, Dryden Road Businesses, Paragraph 2. Please revise as previously requested. Dryden Road Businesses (Parcels 5173, 5174, 5175 and 5176), Page 17, Paragraph 1: If the materials disposed on the Central Parcels are expected to be present on at least the western portions of Lots 5173, 5174, 5175 and 5176, then it would also follow that the materials disposed on the already developed, eastern portions of these Lots may be similar to the materials disposed in the Northern Parcels. Although CRA's visual and analytical data is limited, available data for these parcels seems to confirm this (e.g., TCE 630 ug/m3 in GP-14 directly behind building on Lot 5173 shown in 1954 air photo, and 1,200 ug/m3 TCE in GP-12 on north side of building on Lot 5175 shown in 1954 air photo, compared to maximum of 190 ug/L TCE in Central Parcel gas probes); and would be consistent with the tax map (from 1956-1959 according to page 12 of RI), which shows that the eastern portion of these properties had already been filled and developed, along with the Northern Parcels, before filling began in the Central Parcels. Please revise the last sentence of this paragraph as follows: "Therefore, the materials mentioned above as being disposed on the Central Parcels would also be expected to be present on at least the western portions of Parcels 5173, 5174, 5175, and 5176; and the materials disposed on the eastern portions of these parcels may be similar to the materials disposed in the Northern Parcels.

60. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Page 30, Dryden Road Parcels, Paragraph 3. EPA provided CRA with a copy of the UST removal report. Another significant item in the report is that there appears to be drainage tile at the Site, which CRA has not delineated, and which could provide a preferential pathway for landfill gas. Please revise this section to include this, and all other relevant information from the report.

61. July 2010 Comment 35. Not Addressed. See Also Comment 62 Below. Dryden Road Businesses (Parcels 5173, 5174, 5175 and 5176), Page 17, Paragraph 5: Based on the VOC concentrations in shallow groundwater in VAS-9 on Lot 5173 (TCE 5,100 ug/L, cis-1,2-DCE 3,900 ug/L and vinyl chloride 760 ug/L); soil gas in GP14-09 on Lot 5173 (TCE 630 ug/m3), GP13-09 on Lot 5174 (vinyl chloride 6,800 ug/m3) and GP12-09 on Lot 5175 (TCE 1,200 ug/m3); and the limited number of sampling locations (one test trench on Lot 5174, two test trenches on Lot 5175 - and no test trenches or analytical samples of landfill material on Lot 5173 or Lot 5176 – 9 analytical samples from 3 locations total to characterize approximately 10 acres of property with up to 29 feet of landfill material), revise this paragraph as follows: "Thus, the parcels associated with

the Dryden Road Businesses generally contain RW and CDD mixed with other waste."

62. Section 1.2.2.1, Nature and Extent of Impact and Waste Material, Dryden Road Parcels, Page 31, Paragraph 2, Lines 5 to 11. CRA only collected samples of the landfill material from 3 of the "16 investigative locations", all of them were on the western side of this area, and no samples were collected from Lot 5176 (where there is high TCE in the groundwater), or from Lot 5173, where high chlorinated solvents are present in groundwater near the water table at VAS-9, and where high levels of lead (1,200 mg/kg), naphthalene (3,900 ug/Kg), ethylbenzene (66,000 ug/Kg) and vinyl chloride (220 ug/Kg) were detected in TT-9 on Lot 5272, approximately 10 feet from the Lot 5273 property line. Also, CRA did not collect any samples for TCLP analysis from these properties. Please revise as follows:

> "~~Through~~ At test trench, borehole VAS and soil gas probe investigations, CRA ~~encountered~~ visually identified RW....Based on the stratigraphic logs for the 16 investigative locations on these parcels, the waste is visually fairly consistent ~~across the parcels associated with~~ at investigated locations at the Dryden Road Businesses. CRA has not observed visual evidence of MSW or ISW disposal ~~in this area~~ at investigated locations. CRA did not collect any samples for TCLP analysis from this area."

63. July 2010 Comment 36. Not Addressed on Pages 31 to 32. Section 1.2.2.1, Nature of Backfilled Material, Dryden Road Parcels, Pages 31 to 32. CRA did not address this comment here, or in Section 1.2.5, Streamlined Risk Assessment; and CRA's revised text uses a variety of inconsistent screening values (some 10^{-6}, some 10^{-4}, some residential), not all of which EPA agrees with. CRA's revisions also do not address landfill materials as a source of groundwater and sediment contamination. These pathways are consistent with the site conceptual model and must be included. Please revise this section to use the following, more appropriate, screening criteria: EPA Regional Screening Industrial Soil Criteria (10^{-6}/HI=1); EPA Regional Screening Protection of Groundwater Soil Screening Levels Risk-Based (10^{-6}/HI=1) and MCL-Based; EPA Regional Screening Level Tapwater Criteria (10^{-6}/HI=1); EPA MCLs; EPA Regional Screening Level Industrial Air Criteria (10^{-6}/HI=1) - adjusted by factor of 10 for soil gas to evaluate potential risks to workers in buildings with foundatations located within five feet of soil gas concentration; and Ecologial Consensus-Based Probable Effects Concentrations (PECs) for landfill samples collected from surface materials, trenches and test pits along and near GMR and Quarry Pond embankments or in Quarry Pond Area (see *Prediction of Sediment Toxcicity Using Consensus-Based Freshwater Sediment Quality Guidelines*, EPA 905/R-00/007, June 2000).

(ORIGINAL COMMENT) Dryden Road Businesses (Parcels 5173, 5174, 5175 and 5176), Page 17: See Comment No. 16. Please include the following summary of the major contaminants detected in sampled media on these parcels, and associated risk levels as a Streamlined Risk Assessment to document why remedial action on these properties is clearly warranted:

STREAMLINED RISK ASSESSMENT

Industrial Direct Contact Risks: Data to evaluate industrial direct contact risks on the Dryden Road Businesses Parcels 5173, 5174, 5175 and 5176 is limited. CRA sampled landfill materials at one location on Lot 5174 (three samples from TT-10), and from two locations on Lot 5175 (three samples from TT-11 and three samples from TT-12). CRA did not collect any samples of the landfill material on Lot 5173 or Lot 5176, or sample landfill materials at any other locations within this 10-acre landfill area with 5 to 25 feet of landfill materials.

The limited locations sampled by CRA did not contain any chemicals above industrial 1×10^{-4} cancer or HI=1 risk levels. However, arsenic was present above industrial screening levels at all three locations. The highest concentrations of arsenic were detected in TT-10, and were 21.6 mg/Kg to 51.2 mg/Kg. These concentrations of arsenic correspond to an industrial cancer risk of 1×10^{-5} to 3×10^{-5} and a residential risk of 1.3×10^{-4}.

Benzo(a)pyrene was also detected above industrial screening levels in TT-11 and TT-12. The maximum concentration of benzo(a)pyrene was 660 ug/Kg, which corresponds to an industrial risk of 3×10^{-6} and a residential risk of 4×10^{-5}.

Risks from Soil Gas: VOCs were detected above industrial soil gas criteria equal to a cancer risk of 1×10^{-4} and/or a HI=1 at one out of three gas probes installed at the Dryden Road Businesses properties: GP13-09 installed 6 to 7 ft-bgs on Lot 5174. The soil gas criteria were derived by increasing 10^{-4} and HI=1 indoor industrial inhalation regional screening levels by an attenuation factor of 10, using the same methods in OSWER Vapor Intrusion Guidance.

The risks in GP13-09 are posed by vinyl chloride detected at a concentration of 6,800 ug/m^3. This concentration corresponds to a potential industrial cancer risk of 2.4 x 10-4 and a HI=1.5 for industrial workers in industrial buildings with foundations located within 0 to 5 feet of this concentration.

TCE was detected in the other two gas probes installed on the Dryden Road Businesses property (GP14-09 and GP12-09) above 10-6 industrial and residential soil gas criteria (derived by increasing indoor industrial and residential

inhalation regional screening levels by an attenuation factor of 10, using the same methods in the OSWER Vapor Intrusion Guidance, but with more current toxicity values). The concentration of TCE was 630 ug/m^3 in GP14-09 screened 5 to 6 ft-bgs on Lot 5173, and 1,200 ug/m^3 in GP12-09 screened 5 to 6 ft-bgs on Lot 5175. Based on the adjusted regional screening criteria, these concentrations correspond to a potential industrial cancer risk of 1 x 10-5 to 2 x 10-5 and a residential cancer risk of 5.3 x 10-5 to 1 x 10-4 for workers and residents in buildings and homes with foundations within 0 to 5 feet of these concentrations. Other chemicals, including benzene (0.99 ug/$m^{3)}$, naphthalene (2 ug/m^3), 1,1,1-TCA (21 ug/m^3), 1,1-DCA (2,900 ug/m^3) and/or PCE (280 ug/m^3) were also detected in gas probes on the Dryden Road Businesses, but at concentrations below risk-based screening levels.

Methane was detected consistently at concentrations 66 to 74 percent of the LEL for methane in all three soil gas samples collected from GP13-09 on Lot 5174. The concentrations of methane in GP13-09 were 3.3 to 3.7 percent methane, and the LEL for methane is 5 percent methane.

Risks to Groundwater: Consistent with the presumptive remedy, CRA only collected samples of landfill material from three locations at the Dryden Road Businesses. One location was on Lot 5174 (three samples from TT-10), and two locations were on Lot 5175 (three samples from TT-11 and three samples from TT-12). No samples were collected from Lot 5173 or Lot 5176, or from any other locations within the 10-acre Dryden Road Businesses landfill area.

Low levels of chlorinated solvents were detected at all three sampling locations on the Dryden Road Properties. PCE was detected at concentrations from 4.7 to 4.8 ug/Kg in TT-10 on Lot 5174. TCE was detected in Lot 5175 at a concentration of 1.1 ug/Kg in TT-12, and at a concentration of 10 ug/Kg in TT-11. cis-1,2-DCE was also detected in TT-12 on Lot 5174 at a concentration of 0.3 ug/Kg.

These concentrations of chlorinated solvents are below soil criteria for groundwater protection at the MCL or 10^{-4} or HI=1 risk levels based on a DAF=10. However, the concentrations of PCE in TT-10 are just below soil criteria for groundwater protection based on a risk of 1 x 10^{-4} using a DAF=1 (4.9 ug/Kg), and the concentration of TCE in TT-11 are above soil criteria for groundwater protection based on a risk of 1 x 10^{-5} and a DAF=1 (7.2 ug/Kg).

Arsenic was detected at all three sampling locations above soil criteria for groundwater protection at 1 x 10^{-4} or HI=1 risk levels. The maximum concentrations of arsenic were in TT-10 on Lot 5174 and were 21.6 to 51.2 mg/Kg. These concentrations of arsenic correspond to a potential drinking water risk of 1.6 x 10^{-3} to 3.9 x 10^{-3} and a HI of 6.4 to 16.

Groundwater Contaminants: VAS or groundwater monitoring data are not available to evaluate groundwater adjacent to TT-10, TT-11 and TT-12. The only groundwater sampling locations on the Dryden Road Businesses were at VAS-15 and MW-202 on Lot 5173. These locations are at the northeast corner of the Dryden Road Businesses, 250 to 400 feet from the test trenches.

TCE and its breakdown products, cis-1,2-DCE and vinyl chloride, were detected in groundwater samples at VAS-15. The highest concentration of TCE in shallow groundwater at VAS-15 was 18 ug/L. This concentration is above the MCL for TCE of 5 ug/L. Shallow groundwater in VAS-15 also contained 7.9 ug/L of cis-1,2-DCE and 1.5 ug/L of vinyl chloride.

Deep groundwater at VAS-15 contained higher concentrations of cis-1,2-DCE (maximum concentration 150 ug/L; MCL 70 ug/L) and vinyl chloride (maximum concentration 30 ug/L; MCL 2 ug/L); and lower concentrations of TCE (8.9 ug/L). The maximum concentration of vinyl chloride detected in deep groundwater at VAS-15 corresponds to an unacceptable cancer risk of 1.9×10^{-3}.

Arsenic was also detected in shallow and deep groundwater samples collected from VAS-15. The maximum concentration of arsenic was 97.7 ug/L in a shallow unfiltered groundwater sample collected 40 to 45 ft-bgs. Filtered arsenic data for this sampling interval is not available. A comparison of filtered and unfiltered arsenic data from two other VAS-15 sampling intervals indicates that most of this arsenic may be due to suspended sediment in the groundwater sample due to VAS procedures. However, a groundwater monitoring well was not installed at VAS-15 to confirm this.

TCE and arsenic were also detected in MW-202, but at lower concentrations. TCE was detected in MW-202 at a maximum concentration of 3.3 ug/L during the 2008-2009 sampling, and arsenic was detected at a maximum concentration of 1.8 ug/L. During previous sampling conducted 1998-2005, however, TCE was detected as high as 41 ug/L in MW-202.

Risks to GMR: Part of the Dryden Road Businesses are in the 100 year floodplain, and landfill contaminants in this area could erode and be transported to the GMR during high flood events (see, for example, extent of flooding in January 1959 air photo).

Summary: The limited data collected from the Dryden Road Businesses indicates the landfill materials, soil gas and groundwater in the Dryden Road Businesses area may pose an unacceptable risk to human health and the environment and should be contained as part of the presumptive remedy. The data also indicates there are some areas within the Dryden Road Businesses

that may be hot spots (e.g., VAS-9/GP13-09, near TT-9, MW-210). These areas will require additional investigation ~~since the nature and extent of contamination in these areas was not evaluated further~~ to confirm that these materials can be reliably contained with a solid waste landfill cap, or whether treatment or excavation may be more appropriate in some areas.

64. Dryden Road Businesses, Page 32, Table 2. The table is incomplete. Revise consistent with EPA's comments regarding appropriate screening levels. Arsenic and PCBs should also be included as being detected in MW-202 and MW-215. As discussed in a previous comment, the arsenic in the groundwater in this area may be caused by reducing conditions in the groundwater.

65. July 2010 Comment 36 Not Fully Addressed on Page 32, Quarry Pond Parcels, Lines 3 and 4. Please change "There are no data that indicate the area of the present Quarry Pond below the observed water level elevation was filled..." to "There are no data to indicate whether the area of the present Quarry Pond...."

(ORIGINAL COMMENT) Page 17, Quarry Pond Parcels (Parcels 3274, 3275 and 5178), Paragraph 1, Line 3 Continuing onto Page 18: This sentence states there is "no indication that the area of the present Quarry Pond was filled beyond the material placed in the northeastern portion." This statement is not supported by any analytical data, since CRA did not collect any samples from the bottom of the Quarry Pond, and also conflicts with the later statement that "There is debris that appears to have either been dumped into the pond or washed there during storm events". Additionally, the only analytical data available to characterize the 15 acre Quarry Pond that is up to 35 feet deep in some places – two sediment samples collected by OEPA 150 and 375 feet west of the northeastern portion of the Quarry Pond - contained PAHs and other contaminants. However, it is not clear if this contamination is from erosion or landfilling. (PFI's three sediment samples shown on RI Figure 1.36 in the RI were not analyzed for TAL/TCL parameters). Also, the 1981 air photo in RI Figure 1.25 shows unfilled areas of the Quarry Pond as being filled in subsequent air photos (e.g., parts of Lot 5178 adjacent to Lot 4423 and Lot 3753); and FS Figure 1.4 shows the northern, western and eastern embankments around the Quarry Pond as being comprised of "waste". At many locations, the thickness of this "waste" is not known because CRA's test trenches stopped at the water table, and the number of test trench and VAS locations in this area is limited. Finally, the area shown as being without "waste" in the area of the intersections of Lots 5178, 4423 and 3753 is not supported by any data (there are no investigative points here), is not consistent with the 1981 air photo, and must be corrected. Based on the above, please revise this sentence as follows, and move the last sentence from paragraph 2 to this paragraph:

"There is no ~~indication that~~ data to indicate whether the area of the present Quarry Pond below the current water level was filled beyond the material placed in the northeastern portion of the Quarry Pond or beyond the current extent of the northern, eastern and western embankments of the Quarry Pond. There is also no data to indicate how far the material placed in the northern portion of the Quarry Pond or along these embankments extends into the Quarry Pond. Landfill material was not seen in VAS-20 in the center of the southern Quarry Pond embankment. However, there is no data to indicate how far the landfill material observed in VAS-13 at the southwestern corner of the Quarry Pond or in TT-18 on Lot 3753 extends toward VAS-20. There is also debris in the Quarry Pond, including a few drums (e.g., see RI Figure 1.5), that appears to have either been dumped into the pond or washed there during storm events. No visual or analytical data was collected from Lot 3275."

Also, please state what the current water level (or observed range of water levels) in the Quarry Pond is.

66. July 2010 Comment 39 Not Fully Addressed in Quarry Pond Parcels, Pages 32 to 35. As previously requested, please clarify that no TAL/TCL samples were collected from landfill material or soil on Lot 3274, and include the results for OEPA's sediment samples. (ORIGINAL COMMENT) Quarry Pond, Page 18, Paragraph 5: See Comment 37 and 38 and revise as follows: "Thus, at CRA's test trench and soil boring locations in the northeast portion of Parcel 5178 and in the embankment surrounding the Quarry Pond ~~Parcels contain~~, CRA observed mainly fill material with some RW and CD~~; however, the waste is almost entirely present in the northeastern portion of Parcel 5178 and in the embankment surrounding the Quarry Pond~~. Consistent with the presumptive remedy, CRA only collected limited samples of landfill material for TAL/TCL analysis from the 20 acre Quarry Pond area (4 samples total from 3 locations on Lot 5178: TT-14, TT-16 and TT-17). No TAL/TCL samples were collected from landfill material or soil on Lot 3274; and there is no visual or chemical data for any of the material on Lot 3275. Sediment data for the Quarry Pond is limited to the two sediments samples OEPA collected 15-18 feet below the surface of the Quarry Pond 150 and 350 feet west of the northeast corner of the Quarry Pond in 1996 (sample S15OEPA and S16OEPA).

67. July 2010 Comment 40 Not Fully Addressed in Quarry Pond, Pages 32 to 35. See previous comments about appropriate screening levels and revise. The data and pathways discussed below must be included in this section.

(ORIGINAL COMMENT) Quarry Pond, Page 18: Please add the following streamlined risk evaluation to the end of this section:

STREAMLINED RISK ASSESSMENT

Industrial Direct Contact Risks: Data to evaluate industrial direct contact risks on Quarry Pond Parcels 3274, 3275 and 5178 is limited. Consistent with the presumptive remedy, only four samples of landfill materials were collected from three locations on Lot 5178: one sample from TT-14; one sample from TT-16; and two samples from TT-17. TAL/TCL data is not availble for any of the landfill materials on Lot 3274 and 3275, or from landfill materials at any other locations within this 20-acre area with up to 36 feet of landfill material. Only two sediment samples S15OEPA and S16OEPA are available to evaluate potential risks from direct contact with sediment in the 15 acre quarry pond.

The landfill materials sampled by CRA in the Quarry Pond area did not contain any chemicals above industrial 1 x 10^{-4} cancer or HI=1 risk levels. However, benzo(a)pyrene and other PAHs were present above industrial screening levels in all three sampling locations. The highest concentrations of PAHs were detected in TT-14 and totalled 18,690 ug/Kg. These concentrations of PAHs correspond to a total industrial cancer risk of 9.43 x 10-6 and a total residential cancer risk of 1.3 x 10-4 [for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene].

Although not directly comparable, benzo(a)pyrene and other PAHs were also present above industrial screening levels in both sediment samples collected from the Quarry Pond. The highest concentrations of PAHs were detected in S16OEPA located 150 feet west of the northeastern corner of the Quarry Pond and approximately 75 feet south of the northern embankment of the Quarry Pond. The total concentration of PAHs in S16OEPA was 16,789 ug/Kg. Again, although not directly comparable, these concentrations of PAHs correspond to a total industrial cancer risk of 1.4 x 10-5 and a total residential cancer risk of 1.9 x 10-4 [for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene].

Risks from Soil Gas: CRA did not install any gas probes on Parcels 3274, 3275 or 5178. However, chlorinated solvents and benzene have been detected in shallow groundwater monitoring wells and VAS locations in or adjacent to the Quarry Pond area, and TCE was detected in Quarry Pond sediment sample S16OEPA. Benzene and chlorinated solvents were also detected in soil gas at GP10-09 located 100 feet east of the northeast corner of the Quarry Pond area. The Quarry Pond Parcels are currently vacant. However, a low-permeability containment system in this area would require soil gas sampling and/or long-term monitoring or venting to prevent any unacceptable levels of soil gas contaminants from accumulating below the cap and migrating off-Site or into current or future buildings.

Risks to Groundwater: Consistent with the presumptive remedy, CRA only collected samples of landfill material for TAL/TCL analysis from three locations in the 20-acre Quarry Pond area; and OEPA collected two sediment samples from the Quarry Pond in 1996. The limited landfill material and sediment samples from the Quarry Pond area all contained benzo(a)pyrene and other PAHs, but not above soil criteria for groundwater protection at the MCL or 10^{-4} or HI=1 risk levels based on a DAF=10. However, benzo(a)pyrene and other PAHs were detected in groundwater samples collected from the Quarry Pond area above 1 x 10-4 risk-based levels. The PAHs were detected in VAS-19 screened 2 to 7 feet below the bottom of landfill material at the VAS-19 location, and in P-211 screened 8 to 18 feet below the bottom of the landfill material at the P-211 location. The concentrations of PAHs in VAS-19 correspond to a total cancer risk of 4.5 x 10-4 and the PAH concentrations in P-211 correspond to a total risk of 3.2 x 10-4.

Arsenic was detected in all Quarry Pond landfill material and sediment samples above soil criteria for groundwater protection at a risk of 1 x 10-4 based on a DAF=10 (1.31 mg/Kg); and was also detected in groundwater samples from MW-209 just below 1 x 10-4 risk levels. The concentration of arsenic in the landfilled materials was 5.5 to 10.9 mg/Kg; and the concentration of arsenic in the Quarry Pond sediment samples was 10.3 to 12.6 mg/Kg. The concentration of arsenic in MW-209 in the Quarry Pond was 4.4 ug/Kg, which corresponds to a cancer risk of 9.7 x 10-5. Arsenic was also detected above risk-based levels in unfiltered samples collected from VAS-19 and P-211; however, it is not clear whether these concentrations were due to elevated levels of suspended sediments in the VAS and P-211 samples.

Groundwater Contaminants: VAS-19 and P-211 contain PAHs above 1 x 10-4 cancer risk levels in shallow groundwater samples collected from screened intervals 2 to 7 feet and 8 to 18 feet below the bottom of the landfill. Arsenic was also detected in shallow well MW-209 at concentrations corresponding to a risk of 9.7 x 10-5.

Chlorinated solvents (maximum 0.9 ug/L in shallow VAS-19) and/or benzene (0.58 ug/L in P-211) were detected in shallow groundwater in P-211, MW-209 and VAS-19, but not above MCLs or 1 x 10-4 risk levels. The 0.9 ug/L concentration of vinyl chloride in shallow VAS-19 corresponds to a risk of 5.6 x 10-5. However, consistent with the presumptive remedy, a groundwater monitoring well was not installed at this interval so the actual concentration of vinyl chloride at this location is uncertain. VOCs were not detected in shallow MW-209. However, MW-209 has a 10 foot screen and is screened above the zone of maximum shallow groundwater contamination detected at VAS-19.

A low level of cis-1,2-DCE was also detected in shallow groundwater above the till in VAS-13 at the southwest corner of the Quarry Pond (0.21 ug/L from 662 to 667 ft-msl. cis-1,2-DCE was not detected in MW-218A installed adjacent to the VAS-13 location; however, MW-218A was installed as a water table well from 708.17-698.17 ft-msl. A low level of benzene was also detected in shallow groundwater in VAS-20 (0.45 ug/L) at the southern end of the Quarry Pond. However, consistent with the presumptive remedy a groundwater monitoring well was not installed at VAS-20 so the actual concentration of benzene at this location is uncertain.

Deep groundwater in the Quarry Pond area contains vinyl chloride. Vinyl chloride was detected in VAS-19 at a maximum concentration of 150 ug/L from 660.08 to 655.08. Groundwater monitoring well MW-209A was installed at the same elevation and the contrations of vinyl chloride in MW-209A were 11 to 19 ug/L. The concentrations of vinyl chloride in MW-209A are above the MCL and correspond to a cancer risk of 6.9 x 10-4 to 1.2 x 10-3.

Groundwater monitoring well MW-209A was installed just east of VAS-19 at the same elevation where the zone of maximum contaminants were detected in VAS-19. However, the stratigraphy at MW-209A was different than the stratigraphy at VAS-19. Two layers of till were enountered in VAS-19, from 675.58 to 675.08 and from 646.08 to 645.08. The concentrations of vinyl chloride in VAS-19 between the two till layers was 40 to 150 ug/L, and the sample just above the second till layer in VAS-19 had a vinyl chloride concentration of 65 ug/L. Below the second till layer, vinyl chloride concentrations in VAS-19 decreased to 28 to 11 ug/L. In MW-209A, a shallower, slightly thicker layer of till was encountered from 685.34 to 683.84 ft-msl, and the boring was not drilled deep enough to determine whether the second layer of till encountered in VAS-19 was present. As such, although this could be due to other differences (e.g., between VAS and permanent groundwater monitoring well sampling), there is some uncertainty as to whether MW-209A is representative of the vinyl chloride concentrations detected in VAS-19 between the two till layers.

A low level of cis-1,2-DCE was detected in deep groundwater below the till in VAS-13 at the southwest corner of the Quarry Pond 632.7 to 627.7 ft-msl (0.24 ug/L). cis-1,2-DCE was not detected in deep well MW-218B installed adjacent to the VAS-13 location. However, MW-218B was installed above this elevation (650.13 to 645.13 ft-msl) in a zone where contaminants were not detected in VAS-13.

Arsenic was also detected in deep groundwater in the Quarry Pond area in MW-209A, MW-212 and MW-218B. The maximum concentration of arsenic was 7.6 ug/L in MW-218B. This concentration of arsenic is below the MCL, but corresponds to an unacceptable risk of 1.7 x 10-4.

Groudwater samples from deeper well MW-209A also contained aroclor-1254 at a concentration of 0.046 ug/L, however, this concentration is not above 1 x 10-4 risk levels.

Also, consistent with the presumptive remedy, only limited VAS and limited groundwater monitoring well installation was conducted in the Quarry Pond area, so most of the groundwater in this area has not been characterized.

Ecological Risks: The Quarry Pond is a designated wetland. Several PAHs were detected in sediment sample S16OEPA above PECs for sediment, including: benzo(a)anthracene (concentration 1,500 ug/Kg; PEC 1,050 ug/Kg); benzo(a)pyrene (concentration 1,800 ug/Kg; PEC 1,450 ug/Kg); chrysene (concentration 1,500 ug/Kg; PEC 1,290 ug/Kg); fluoranthene (concentration 2,600 ug/Kg; PEC ug/Kg); phenanthrene (concentration 1,500 ug/Kg; PEC 1,170 ug/Kg); and pyrene (concentration 3,000 ug/Kg; PEC 1,520 ug/Kg). Aroclor-1254 was also detected in S16OEPA just below the PEC (concentration 660 ug/Kg; PEC 676 ug/Kg). These chemicals were also detected in landfill material and groundwater samples collected in the Quarry Pond area. This indicates that groundwater discharging to the Quarry Pond, landfill materials and sediments in the Quarry Pond should be contained as part of the presumptive remedy.

Risks to GMR: The steep western embankment of the Quarry Pond is constructed of landfill materials and is in the GMR floodplain. This indicates the landfill materials in the embankment could pose a risk to the GMR through erosion from surface runoff and flooding. The landfill material in the Quarry Pond area and the embankments surrounding the Quarry pond are in the 100 year floodplain. Landfill contaminants in these areas could erode and be transported to the GMR during high flood events (see, for example, extent of flooding in January 1959 air photo).

Summary: The limited data collected from the Quarry Pond area indicates the landfill materials, sediment and groundwater in the Quarry Pond area poses an unacceptable risk to human health and the environment and should be contained as part of the presumptive remedy. A low-permeability containment system in this area would also require soil gas sampling and/or long-term monitoring or venting to prevent any unacceptable levels of soil gas contaminants from accumulating below the cap and migrating off-Site or into current or future buildings.

During RD, CRA, property owners or other interested parties may conduct additional, systematic sampling with TAL/TCL analysis of the landfill materials, sediment, surface water, soil gas and/or groundwater in the Quarry Pond area (horizontally and vertically) in accordance with EPA-approved planning

documents, to evaluate whether there are any specific areas within these properties where the landfill materials, sediment, soil gas or groundwater do not pose an unacceptable risk to human health or the environment and may not require containment.

68. July 2010 Comment 42 Not Addressed in Jim City and Barnett Parcels on Pages 35 to 37. Please revise as previously requested. Additional test pits and trenches will be needed in these areas as part of OU2. Please remove all statements indicating that the source of the anomalies has been identified.

(ORIGINAL COMMENT) Jim City and Barnett Parcels (Parcels 3753, 4423, 4610 and 3252), Page 19, Paragraph 3, Lines 10 to 14: The statement that CRA encountered rebar, scrap metal, and foundry sands in the upper five feet of fill during the excavation of TT-17 and during the drilling of VAS-22, which were installed in and around these anomalies is not entirely accurate. First, although brown sand fill (from the log, it is not clear if this is foundry sand), rebar and scrap metal were detected in the first five feet of fill in TT-17, TT-17 was located approximately 50 feet from the northern conducive anomaly identified on Jim City property, and approximately 75 feet from the closest magnetic anomoly - in an area where no anomalies were identified. Second, although VAS-22 was located within or adjacent to one of the conducive anomalies and one of the magnetic anomalies, the only landfill material identified in this boring was foundry sand. Based on the figures and boring logs, the other, limited investigative locations on the Jim City properties (i.e., TT-18, GP07-09 and GP08-09) were also outside the Jim City magnetic anomalies, and TT-18 and GP07-09 were outside the conducive anomalies. GP08-09 may have been located within or adjacent to one of the conducive anomalies at the Jim City properties; however, this boring only contained brown sand fill, not rebar or scrap metal.

This section of the FS also does not discuss the conducive fill anomaly on Barnett Lot 4610. GP09-09 was at the northwestern end of this anomaly and contained grey, brown and black silt, sand and gravel fill. CRA's only other investigative location on Lot 4610, GP09-09, also contained brown and dark brown silt, sand and gravel fill, and is located approximately 25 feet from the southeastern end of this anomaly.

Please revise this section of the FS to provide a more accurate, complete discussion.

69. July 2010 Comment 45 Not Fully Addressed in Jim City and Barnett Parcels Pages 35 to 37. See previous comments about appropriate screening levels and revise. The data and pathways discussed below must be included in this section. Residential screening levels are appropriate for soil gas samples in this area because of the proximity of the adjacent houses.

(ORIGINAL COMMENT) Jim City and Barnett Parcels (Parcels 3753, 4423, 4610 and 3252), Page 20: Please add the following streamlined risk evaluation to the end of this section:

STREAMLINED RISK ASSESSMENT

Industrial Direct Contact Risks: Data to evaluate industrial direct contact risks on Jim City and Barnett Parcels 3753, 4423, 4610 and 3252 is limited. Consistent with the presumptive remedy, CRA only collected four samples of landfill materials for TAL/TCL analysis: two samples from TT-17 on Jim City Lot 4423 (although it is not clear if the samples collected from TT-17 were collected from Lot 4423 or the adjacent, Quarry Pond Lot 5178); and two samples from TT-18 on Jim City Lot 3753. CRA did not collect any samples of landfill material for TAL/TCL analysis from any of the anomolous areas identified during the geophysical survey; from Barnett Lots 4610 or 3252; or from any other landfill materials within this 7.5 acre area with up to 25 feet or more of landfill material.

The landfill materials sampled by CRA at the Jim City Parcels did not contain any chemicals above industrial 1 x 10^{-4} cancer or HI=1 risk levels. However, benzo(a)pyrene and was present above industrial screening levels in TT-17; and other PAHs were present in TT-17 above residential screening levels. Benzo(a)pyrene was also detected above residential screening levels in TT-18. The highest concentrations of PAHs were detected in TT-17 and totalled 13,740 ug/Kg. These concentrations of PAHs correspond to a total industrial cancer risk of 7.1 x 10-6 and a total residential cancer risk of 9.6 x 10-5 [for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene].

Arsenic was also detected above industrial and residential screening levels in both test pits. The highest concentration of arsenic was 17.7 mg/Kg, which corresponds to an industrial cancer risk of 1.1 x 10-5 and a residential risk of 4.5 x 10-5.

Risks from Soil Gas: PCE, TCE and napthalene were detected in three out of four soil gas samples collected at the Jim City and Barnett Parcels above 10-6 industrial and residential soil gas criteria (derived by increasing indoor industrial and residential inhalation regional screening levels by an attenuation factor of 10, using the same methods in the OSWER Vapor Intrusion Guidance, but with more current toxicity values). The chemicals were detected in GP08-09 screened within the landfill material on Jim City Lot 4423, and in GP09-09 and GP10-09 screened within the landfill material on Barnett Lot 4610.

The highest levels of chemicals [PCE (120 ug/m3), TCE (2000 ug/m3) and napthalene (3.8 ug/m3)] were generally detected in GP09-09 at the southeastern Site boundary on Barnett Lot 4610. These concentrations correspond to a total industrial cancer risk of 3.9 x 10-5 for workers in buildings with foundations within 5 feet of these soil gas concentrations, and an unacceptable residential risk of 2 x 10-4 for residents in homes with foundations within 5 feet of these soil gas concentrations.

GP09-09 is located approximately 150 feet from a residential property; and approximately 200 feet from a house with a basement foundation.

Risks to Groundwater: Consistent with the presumptive remedy, CRA only collected samples of landfill material for TAL/TCL analysis from two locations in the 7.5 acre Jim City and Barnett Parcels. The landfill material from both samples contained arsenic above soil criteria for groundwater protection at a risk of 1 x 10-4 based on a DAF=10 (1.31 mg/Kg). The maximum concentration of arsenic was 17.7 mg/Kg and was detected in TT-18. Arsenic was also detected in shallow groundwater at the Jim City Parcels in a filtered groundwater sample collected from from VAS-22 above 1 x 10-4 risks levels. The concentration arsenic in a filtered groundwater sample from VAS-22 was 6.5 ug/L. This concentration is not above the MCL, but corresponds to a cancer risk of 1.4 x 10-4.

Groundwater Contaminants: Consistent with the presumptive remedy, groundwater sampling was only conducted at one location in the Jim City and Barnet Parcels - shallow VAS-22. A permanent groundwater monitoring well was not installed at this location, and groundwater samples were not collected from deep groundwater beneath the Jim City and Barnett Parcels.

Low levels of chlorinated solvents (1.1 ug/L 1,1-DCA; 0.98 ug/L cis-1,2-DCE; and 0.75 ug/L vinyl chloride) were detected in shallow groundwater samples at VAS-22. These concentrations are below MCLs, but the 0.75 ug/L concentration of vinyl chloride in VAS-22 corresponds to a cancer risk of 4.7 x 10-5. Arsenic was also detected in a filtered shallow groundwater sample from VAS-22 above 1 x 10-4 risks levels. The concentration arsenic in the filtered groundwater sample from VAS-22 was 6.5 ug/L. This concentration is not above the MCL, but corresponds to a cancer risk of 1.4 x 10-4.

Summary: The limited data collected from the Jim City and Barnett Parcels indicates the landfill materials, soil gas and groundwater at these properties pose or may pose an unacceptable risk to human health and the environment and should be contained as part of the presumptive remedy.

During RD, CRA, property owners or other interested parties may conduct additional, systematic sampling with TAL/TCL analysis of the landfill materials, soil gas, and/or groundwater in the Jim City and Barnett Parcels (horizontally and vertically) in accordance with EPA-approved planning documents, to evaluate whether there are any specific areas within these properties where the landfill materials, soil gas or groundwater do not pose an unacceptable risk to human health or the environment and may not require containment.

70. July 2010 Comment 46 Not Addressed on Pages 38 to 46. Please revise. Section 1.2.3, Nature and Extent of Contamination, Pages 20-23. This section of the FS must be revised consistent with all previous FS comments or deleted. Some specific comments are listed below.

71. July 2010 Comment 47 Not Fully Addressed on Page 38. Revise Lines 1 and 2 as follows: "to identify the impacts resulting from the previously described historic Site activities at investigated locations." (ORIGINAL COMMENT) Section 1.2.3, Nature and Extent of Contamination, Page 20, Paragraph 1, Lines 1 and 2: See previous comments. The full extent of contamination and impacts at the Site has not been identified. Please change "to identify the extent of impact" to "to identify impacts".

72. Page 38, Section 1.2.3, Nature and Extent of Contamination, Bullets 5 to 9. Please insert "(report not fully approved by EPA)" after these bullets (Leachate Seep Investigation, Test Pit/Trench Investigation, Phase 1 Groundwater Report, Bathymethry Survey and Geophysical Investigation and Landfill Gas/Soil Vapor Investigation).

73. July 2010 Comment 49 Not Addressed on Page 38, Section 1.2.3, Nature and Extent of Contamination, Paragraph 2, Line 6. See previous comments. CRA does not know the nature of the impact at the Site because CRA's characterization across OU1 is horizontally, vertically and analytically limited. Please Address. Section 1.2.3, Nature and Extent of Contamination, Page 20, Paragraph 3: See previous comments. The nature and extent of impact at the Site has not been fully characterized. Please delete "including the nature and extent of impact at the Site" from this paragraph.

74. Section 1.2.3, Nature and Extent of Contamination, Page 39, Bullet 4: See previous comment re: EPA's Streamlined Risk Assessment. EPA is not requiring an action because chemical concentrations at the Site exceed 10^{-6} screening levels or residential levels. Also, EPA continues to disagree that CRA's sampling was "representative". Please revise as follows: "Concentrations of VOCs, SVOCs, PCBs, pesticides and metals at sampled locations, were greater than 10^{-4} or HI=1 risk based levels for industrial use, and also indicate these materials pose a potential threat to groundwater and to the GMR."

75. Section 1.2.3, Nature and Extent of Contamination, Page 39, Bullet 5, Lines 1 to 3: This bullet states that CRA did not identify any VOC impacts in OU1 surface soil based on the results of prevous investigations. First, VOC impacts in surface soil are generally limited because these chemicals are volatile and, at shallower, depths, they are more likely to volatilze into the atmosphere. Second, previous surface soil sampling was limited to Lot 5177; however, even so, VOCs were detected in S8-EPA (TCE, PCE and toluene), in slightly deeper S01-OEPA (PCE), and in S1-EPA, S5-EPA, S6-EPA, S7-EPA, S03-OEPA, S08-OEPA, S10-OEPA and S11-OEPA (toluene). Please revise this bullet to provide this more complete information.

76. Section 1.2.3, Nature and Extent of Contamination, Page 39, Bullet 5, Lines 3 to 5: Benzene was detected in landfill material in TP-5, TT-21, TT-22, TT-7, TT-9, TP-3, TP-6, TT-8 and TT-19. The drum CRA found in TT-21 was also RCRA characteristic hazardous waste for benzene, and the composite sample from the 5 drums found by Valley Asphalt contained 7,000 ug/Kg benzene. Benzene was also found in landfill gas samples collected in other areas of the Site where soil data is not available. Please revise as follows: "The presence of benzene and ethylbenzene in the ~~soil~~ landfill is ~~potentially~~ most likely attributable to the historic presence of ful oil, gasoline, kerosene, and waste oil USTs in the northern portion of the Site, as well as drums and other waste material in the landfill.

77. Section 1.2.3, Nature and Extent of Contamination, Page 39, Bullet 5, Lines 5 to 8: Chlorinated solvents were detected in landfill material in TP-2, TP-3, TP-4, TP-5, TP-6, TT-5, TT-7, TT-8, TT-9, TT-10, TT-11, TT-12, TT-19, TT-20, TT-21, TT-22 and TT-23. The composite sample from the 5 drums found by Valley Asphalt also contained 64,000 ug/Kg of TCE, as well as 1,1,1-TCA and vinyl chloride. Chlorinated solvents were also found in landfill gas samples collected in other areas of the Site where soil data is not available. Please revise as follows: "Chlorinated VOCs, including PCE, TCE, cis-1,2-DCE and ~~one of its~~ the degradation product VC, were also detected in ~~soil~~ landfill material samples collected from Parcel 5171, 5054, 5172, 5174 and 5176 (landfill material in Parcel 5173 and Parcel 5176 was not sampled). The source of these contaminants ~~is not clear but~~ may be related to the former Ottoson Solvent operations, as well as drums and other waste material in the landfill."

78. Section 1.2.3, Nature and Extent of Contamination, Page 39, Bullet 6: SVOCs are also present in oil and brake fluid. Alcine's notes on the tax map indicate these materials were disposed at the Site, so their presence at the landfill is also from the waste disposal of these materials, not just from oil and hydraulic fluids leaking from vehicles in the former auto areas. Please revise this bullet to include this information.

79. Section 1.2.3, Nature and Extent of Contamination, Page 40, Bullet 1, Line 3. Lead was detected at a concentration of 12,100 mg/Kg, 15 times greater than the industrial HI=1 risk concentration, in S10(OEPA) collected from 0-0.3 ft-bgs. Please change from "2 ft-bgs to approximately 26 ft-bgs" to "from 0 to 0.3 ft-bgs to approximately 26 ft-bgs."

80. Section 1.2.3, Nature and Extent of Contamination, Page 40, Bullet 1, Lines 3 and 4. Since lead is present above industrial HI=1 levels in 16 out of about 41 sampling locations (about 39 percent), and above soil screening levels for groundwater protection at the MCL based on a non-conservative DAF = 10 (140 mg/Kg) at at least 20 out of 41 sampling locations (about 49 percent), please change "The primary inorganic COC is arsenic" to "The primary inorganic COCs are lead and arsenic".

81. Section 1.2.3, Nature and Extent of Contamination, Page 40, Bullet 1, Lines 5 to 8. Since the composite sample of the five drums removed from Valley Asphalt and the sample from the drum CRA removed from TT-21 was TCLP characteristic for lead, please add "and drummed waste" to the list of the likely sources of the metals at the Site in these lines.

82. Leachate, Page 41, Bullet 1, Line 15: The statement that perched areas are likely transient and only present seasonally or after significant precipitation events is not justified by the available data. This statement should be removed.

83. July 2010 Comments 57 and 58 Not Fully Addressed in Leachate, Page 41, Bullet 2: The discussion in the middle of the paragraph regarding the groundwater elevation along the embankment of the Great Miami River relative to the topography of the area is invalid. The groundwater elevations are based on improper contouring of the groundwater elevations in the area (Figure B.8), due to the improper use of surface water gauge elevation data in the contouring software that was used. The software appears to treat the surface water elevations as points rather than surfaces, and contouring groundwater near the river as if the gauge data were wells. The actual groundwater elevations could be higher at times than the ground surface, potentially resulting in leachate seeps. In addition, this discussion does not account for the possible effects of flooding. See below and revise. The discussion must include the additional data from the transducers and the increased static monitoring conducted this year, since GMR discharge was as high as 32,000 cfs.

(ORIGINAL COMMENT 57) Leachate, Page 22, Bullet 2: CRA did not collect any groundwater elevations or look for leachate seeps during or immediately after flood events, so CRA's analysis is skewed. The maximum discharge CRA captured during their 2008-2010 groundwater elevation monitoring/leachate seep

inspections was a GMR discharge of about 11,600 cfs on February 9, 2009. During this monitoring event, the river elevation was 715.62 ft-msl, which is almost to the bottom of the embankment, which CRA places at elevation 716 ft-msl. Two days later, the GMR discharge reached a high of 18,700 cfs, however, CRA did not collect any river or groundwater elevation data during this event, or investigate any leachate seeps immediately after this event. Please revise this paragraph to discuss the limitations of CRA's monitoring, and the potential for leachate generation along the embankments of the GMR and the Quarry Pond (which was not discussed at all, and appears to have a bottom elevation of 710 ft-msl) during flood events that may inundate some portion of these embankments and also result in a temporarily higher water table, especially areas of the landfill that are closest to the river and the Quarry Pond.

(ORIGINAL COMMENT 58) Leachate, Page 22, Bullet 2: Please revise this section to discuss whether there is a potential for leachate generation along the GMR embankment of the Site as the groundwater rises and falls if a low-permeability cap is placed over the landfill materials in this area; and the potential for leachate generation in the Quarry Pond embankments and the materials in the northeastern Quarry Pond with the rise and fall of groundwater and Quarry Pond levels if a low-permeability cap is placed over these materials.

84. July 2010 Comment 56 Not Fully Addressed in Leachate, Page 41, Bullet 2, Line 14: The statement that the high permeability of the waste material would appear to prevent the generation of perched areas of leachate cannot be justified by the level of investigation performed on the wastes. In addition, the high permeability referred to would contribute to the migration of leachate to groundwater. Please revise.

(ORIGINAL COMMENT) Leachate, Page 22, Bullet 2: This bullet states that the high permeability of the native soil and waste material would appear to prevent the generation of perched areas of leachate. However, CRA observed perched water at GP19-09 (1' perched water at 19 ft-bgs) and GP-20-09 [1' gray sand, wet (perched water) at 7 ft-bgs]; and wet zones above the water table in GP01-09 (0.5' wet at 8 ft-bgs) and GP18-09 (1.6' wet at 21.1 ft-bgs). CRA did not collect any water or soil samples from these intervals, however, soil gas samples from these locations had some of the highest levels of soil gas concenrations at the Site, and all locations contained VOCs in soil gas above 1 x 10-4 or HI>1 industrial risk concentrations. Methane was also detected at two of these locations: GP01-09 and GP18-09 consistently above the UEL for methane (20.6 to 28.4 percent methane). CRA should also review other test trench, test pit, VAS and monitoring well borings to identify any other locations where perched water or wet zones above the water table were identifed. Please revise this section of the FS to discuss this thoroughly.

85. July 2010 Comment 55 Not Fully Addressed on Page 42, Bullet 1. CRA indicates the Large and Small Ponds will be addressed through capping, but it does not seem like this will work without underground drains unless this area is filled in prior to capping. Please state whether these areas will be filled, the type of fill material that will be used for filling, and to what estimated elevation/thickness. While some amount of regrading and consolidation of landfill material is to expected at this Site (although CRA did not discuss this), fill material that is anticipated to be in contact with the rising and falling groundwater table should at least be clean fill material.

(ORIGINAL COMMENT) Page 21, Leachate, Bullet 1: The Large and Small Ponds are fed by groundwater and rise and fall with groundwater levels (RI page 104). Since the ponds appear to be low spots in the landfill that were not filled in all the way, the water in the Large and Small Ponds is leachate, although it was never sampled by CRA. Please revise this bullet to discuss the potential for leachate generation in the Large and Small Ponds, since it would seem that this will need to be taken into account during RD (e.g., underground drains or other engineering technologies may be needed).

86. Section 1.2.3, Nature and Extent of Contamination, Page 42, Bullet 1, Lines 9 and 10. Since OU1 is a containment remedy, and one of the RAOs of the OU1 remedy (i.e., the cap) is to "Minimize infiltration and resulting contaminant leaching to groundwater and surface water in areas of OU1 where contaminants are currently leaching or have the potential to leach at concentrations that pose or would pose an unacceptable current or potential future risk to human health and the environment", please revise this sentence as follows: "Potential risks associated with ~~contaminants leaching to~~ groundwater will be assessed and, if necessary adressed, as part of the OU2 RI/FS".

87. July 2010 Comment 58 Not Addressed on Pages 41 (Bullet 3) and 42. Please revise this paragraph as follows:

> "As infiltrating precipitation migrates vertically downward through waste or contaminated soil, or if waste or contaminated material is in contact with groundwater, ~~it~~ contaminants may leach ~~contaminants~~ from the waste or soil and be transported ~~the contaminants~~ to the underlying groundwater. CRA did identify lead at concentrations greater than the TCLP criteria in the TCLP leachate analysis completed on two composite samples collected from black sand on Parcels 5054 and 5177 and in the drum removed from TT-21. Lead was also detected at concentrations greater than the TCLP criteria in a composite sample collected from the five drums removed from Valley Asphalt, and was above EPA's RSL for soil groundwater protection criteria at the MCL based on a DAF of 10 (140 mg/Kg) in at least 20 out of 41 test pit, trench and soil sampling locations.

~~However~~, Concentrations of lead in groundwater samples collected by CRA in the groundwater monitoring wells are below USEPA MCL RSLs, with the exception of the concentration of total lead in one of two samples from MW-215A and a sample from P-211. However, CRA did not install groundwater monitoring wells at locations or in intervals where high levels of lead and/or arsenic were detected in VAS samples (e.g., 1,940 ug/L in an unfiltered shallow groundwater sample from VAS-5 in the Northern Parcels, and 3,200 ug/L in an unfiltered shallow groundwater sample from VAS-11 in the Central Parcels). The presence of suspended particulate matter in VAS samples may have contributed to elevated metals concentrations in unfiltered VAS samples, thus a comparison of the total metals VAS results to RSLs ~~was~~ may not be appropriate and was not completed. USEPA approved the collection and analysis of the filtered groundwater samples in a conference call on December 3, 2008. Beginning on December 6, 2008, and, consistent with CRA's streamlined, presumptive remedy investigation, CRA collected and filtered the groundwater samples submitted for dissolved arsenic and dissolved lead analyses from a minimum number of approximately every fourth sampling interval. After the groundwater samples were analyzed, it became apparent, however, that filtered data is not available for all intervals where high levels of lead or arsenic were detected in unfiltered VAS samples, including the VAS-5 and VAS-11 sampling intervals discussed above. Concentrations of unfiltered (i.e., total) arsenic and lead at all VAS locations were greater than RSL criteria. Concentrations of dissolved (i.e., filtered) metals ~~sampled~~ at all VAS locations (where sampled) were less than the concentrations of total (i.e., unfiltered) metals at ~~all~~ comparable locations, typically by more than an order of magnhitude, and were less than MCL RSLs, with the exception of VAS-11, VAS-24, VAS-26 and VAS-27. Therefore, the concentrations of metals in these unfiltered VAS samples were biased high due to metals present in the particulate. ~~The groundwater data indicate that there does not appear to be significant leaching of lead into the undergroundwater.~~ Benzene was detected above TCLP leaching criteria in the TT-21 drum removed by CRA, and benzene, TCE, PCE, vinyl chloride, and/or cis-1,2-DCE were detected in landfill materials at concentrations above EPA RSL soil groundwater protection criteria equal to the MCL and/or a cancer risk of 10-4 based on a DAF=10 at the following locations: TP-3, TP-5, TT-8, TT-9, TT-20, TT-21, TT-22 and TT-23. These VOCs were also detected above MCLs and/or EPA RSLs equal to a cancer risk of 10-4 and/or a HI=1 in groundwater samples collected from within the landfill area (VAS and/or groundwater monitoring well samples). Groundwater will be further assessed during the OU2 RI/FS.

(ORIGINAL COMMENT) Leachate, Page 22, Bullet 2: The statement that, with

the exception of lead in MW-215A and P-211, concentrations of lead in groundwater samples collected by CRA in the Central and Northern Parcel monitoring wells are below MCLs, and therefore, there does not appear to be significant leaching of lead into the underlying aquifer, is misleading. Lead was detected at very high concentrations in unfiltered shallow and deep groundwater samples across the Site. For example, lead was detected at 1,940 ug/L in an unfiltered shallow groundwater sample from VAS-5 in the Northern Parcels, and at a concentration of 3,200 ug/L in an unfiltered shallow groundwater sample from VAS-11 in the Central Parcels. A comparison of available filtered and unfiltered groundwater data collected from some sampling locations and intervals (filtered data is not available for all sampling locations and intervals, and not for the VAS-5 and VAS-11 sampling intervals discussed above), indicates that most of the lead in the VAS samples may have been sorbed onto particulate matter in the groundwater, instead of dissolved in the groundwater. However, consistent with the presumptive remedy, CRA did not collect filtered groundwater data from all VAS samples to confirm this, nor did CRA install permanent groundwater monitoring wells at locations where high levels of lead were detected in unfiltered samples and resampled. Also, consistent with the presumptive remedy, CRA installed several monitoring wells without VAS, and did not sample these wells for lead (e.g., MW-225, MW-226, MW-227, MW-228 and MW-229). As a result, the full extent of lead contamination in on-Site groundwater is uncertain. Please revise this bullet to provide a more complete, accurate summary as discussed above.

88. Section 1.2.3, Nature and Extent of Contamination, Pages 41 (Bullet 3) and 42: Please revise Table 1.6, VAS Sample Results, to include the stabilized turbidity value at the time of sample collection for each VAS sample and reference this information in this section.

89. Section 1.2.3, Nature and Extent of Contamination, Page 42, Bullet 2. This section must be re-written since it appears remedial measures to control leachate will be needed in the Large and Small Pond areas (e.g., filling), and may be needed along the embankments based on further evaluation of flood and high water table groundwater conditions along and within embankment areas. Also, consistent with previous comments, EPA does not agree that "significant leaching of contaminants to groundwater has not been observed" and this statement must be removed from the OU1 RI/FS.

90. Section 1.2.3, Nature and Extent of Contamination, Page 42, Landfill Gas and Soil Vapor, Bullets 1 and 2. Please clarify which of the probes are "soil probes" (perhaps GP-6 and GP-7 which were not installed within the landfill area?), and which of the probes are LFG probes (the rest of the gas probes?). Materials observed in a two inch geoprobe boring may not be representative of other, surrounding landfill materials, especially in areas where high levels of

methane were detected. If "putrescible" materials were not observed in these borings, especially in locations where high levels of methane were detected, the more likely conclusion is that CRA's limited investigation was not adequate to characterize the primary source(s) of methane at the Site. For example, methane was detected above the LEL in GP-1, GP-2, GP-4/GP-21 and GP-18. The closest additional gas probes to these locations (where "putrescible" materials were also not detected), are a minimum of 200 to 400 feet away from these locations, and randomly located, leaving landfill materials and LFG, including non-methane ogranic compounds, uncharacterized across broad areas of the Site. Also, it is not clear why the wood fragments and newspapers observed by CRA would not generate methane. There was also at least one instance where Cargil dumped organic waste on Valley Asphalt (reportedly removed). If this was not an isolated instance, this material may also be a source of methane.

Please revise these bullets as follows:

- CRA did not observe putrescible waste materials at any of the locations where soil or LFG probes were installed (NOTE: Please define the difference between soil probes and LFG probes) (15 locations to characterize LFG in 55 acres of landfill material in OU1, or approximately 1 gas probe per every 3.6 acres). Fill material that CRA observed in the 2-inch geoprobe borings consisted of sands and gravels, RW (predominantly foundry-type sands and, in one location, cinder or slag-like material), CDD (brick and wood fragments), and small amounts of ISW (small amounts of glass and plastic in three boreholes)." (NOTE: Please explain why the wood fragments detected in these and other borings, are would not generate methane.)

- Although CRA identified methane in LFG at concentrations greater than the lower explosive limit (LEL) ~~for methane~~ in ~~isolated~~ 4 out of 15 OU1 soil gas probe locations (more than 25 percent of sampled locations), CRA's investigations did not find, ~~there is not~~ a widespread source of putrescible/readily decomposable waste material contributing to the production of methane. The majority of the putrescible waste accepted at the Site was reportedly burnt leaving mainly inert ash and non-combustible materials to be disposed in the landfill. The MSW that CRA observed in the test pits and boreholes installed during investigations consisted of tin cans, broken disches, newspapers, and glass. Therefore, based on CRA's investigations, there is little decomposition of organic material that would readily produce methane and the source(s) of the high levels of methane detected in these gas probes has not been determined.

- Through completion of ~~the~~ CRA's limited LFG and Soil Vapor

Investigation, CRA....

NOTE: Please revise the rest of this bullet and section consistent with previous comments concerning appropriate screening levels.

Also, could the degradation of any other the other organic chemicals found at the Site, benzene, the chlorinated solvents, etc., cause methane generation? Or the organic material that was documented to have been disposed by Cargil at least once on the Valley Asphalt property? Please discuss.

91. July 2010 Comment 62 Not Fully Addressed on Page 43, Landfill Gas and Soil Vapor, Bullet 3. Please revise as requested. See results for GP-13 and GP-9 (based on residential). Page 23, Landfill Gas and Soil Vapor, Sentence 2: The sentence "Although significantly elevated concentrations are not present across the Site" is not accurate. See previous comments and revise as follows: "Although significantly elevated concentrations are ~~not~~ present ~~across~~ at the Site (most notably at Valley Asphalt, along Dryden Road and at the southeastern Site boundary on Lot 4610), further investigation is warranted to confirm:"

92. July 2010 Comment 63 Not Fully Addressed on Page 43, Landfill Gas and Soil Vapor, Bullet 3, Dash 2. Please revise as requested. Page 23, Landfill Gas and Soil Vapor, Dash 2: Contaminant concentrations in soil gas are high enough to cause a potential risk to occupants in on-Site buildings, especially since the buildings are located over a landfill with VOC-contaminated landfill materials, soil gas and shallow groundwater (see previous comments). EPA agrees that CRA should collect an appropriate number of subslab and indoor air samples from all on-Site buildings and in all near-Site structures (especially houses) to determine if there is an immediate need to vent these structures. However, a lower-permeability cap over the landfill may also cause increased levels of indoor air contamination over time, which current air sampling will not identify. Based on the levels of VOCs seen in landfill material, soil gas and groundwater, the FS must evaluate the installation of venting systems and alarms around on-Site buildings as part all low-permeability capping alternatives. Also, OAC 3745-27-12 (explosive gas) and OAC 3745-76 (non-methane organic compounds) are ARARs for the Site.

Please revise as follows: "The ~~potential~~ current risk of exposure, through inhalation, to LFG and soil vapor in building structures by conducting an indoor air investigation to determine whether there is a need for immediate venting in on-Site buildings and, based on the results of additional off-Site shallow groundwater investigation, in residences located over the shallow VOC plume."

93. Section 1.2.3, Nature and Extent of Contamination, Page 42, Landfill Gas and Soil Vapor, Bullet 3, Dashes 1 and 2. CRA's limited soil gas sampling

indicates high levels of methane, VOCs and naphthalene are present in some areas of the site above acceptable risk levels, but CRA did not determine the source(s), or the full nature or extent of the contamination. Further investigation must be conducted during the OU1 remedial design (if not sooner), to evaluate the full nature and extent of methane and NMOC concentrations across OU1, so the OU1 remedy (currently a passive venting system) can be appropriately designed and monitored to ensure the remedial action objective of controlling, and if necessary, treating unacceptable concentrations of landfill gas and soil vapor, is met. Please revise this section to include this.

The purpose of the vapor intrusion study is to determine if there is a current risk to occupants in on-site and near-site buildings such that the buildings will need to be immediately vented. However, even if unacceptable levels of methane and NMOCs are not found in indoor air, existing methane and NMOC concentrations at the site will not just go away, and will continue to pose a potential future risk to on- and off-site receptors over the long-term; which is why the OU1 remedy must address this pathway.

94. July 2010 Comment 59 Not Addressed on Page 44, Groundwater, Bullet 2. Please revise as requested. Page 22, Groundwater, Bullet 1: It is not appropriate to indicate that only "portions" of the groundwater beneath the Site are contaminated. CRA did not characterize the full extent of on-Site groundwater contamination; and EPA did not require a full groundwater characterization since this is not necessary to support EPA's presumptive remedy for the Site. See previous comments and revise this bullet as follows:

> "Through completion of a groundwater investigation, CRA determined that ~~portions of the~~ shallow groundwater, i.e., in the Upper Aquifer Zone, beneath the Site ~~are~~ is impacted with Site-related contaminants, including..."

95. July 2010 Comment 60 Not Addressed in Groundwater, Page 45, Bullet 1. Please revise as requested. Page 22, Groundwater, Bullet 2: Based on CRA's SDDL and DPL investigations, and based on Delphi's groundwater flow maps which indicate their former deep groundwater withdrawls and the dewatering system at the University of Dayton's stadium has, and continues to pull Delphi's groundwater to the east, EPA does not readily agree there is "also evidence of a potential off Site sources(s)" to SDDL's deep groundwater contamination. Also, while EPA agreed to allow CRA additional time to conduct a deep source area investigation (which, based on CRA's proposed OU2 scope of work, CRA seems reluctant to perform in a thorough, defensible manner now), this was at OEPA's request, and not because EPA thought it was not appropriate to include deep groundwater as part of OU1.

Please revise as follows: "Deeper groundwater is also impacted; however, there ~~is~~ may also be evidence of a potential off Site source(s) and the upgradient and downgradient extent of the deep groundwater impacts have not been defined. Therefore, ~~inclusion of~~ a groundwater remedy for deeper groundwater, i.e., in the Lower Aquifer Zone, ~~in this FS is not appropriate, and it~~ will be addressed as part of the RI/FS for OU2."

96. July 2010 Comment 61 Not Addressed in Groundwater, Page 45, Bullet 2. Please revise as requested. Page 22, Groundwater, Bullet 3, Sentence 2: Since LNAPL was still present in BH04-09; BH07-09 and BH08-09, the full extent of LNAPL has not been delineated, so it is uncertain whether MW-219 is in the approximate center of the LNAPL area. Please revise as follows: "CRA has not observed free-phase LNAPL in the monitoring well (MW-219) installed in the approximate center of the LNAPL area (however, the actual extent of LNAPL has not been determined, e.g., beyond BH04-09, BH08-09 and BH07-09)."

97. Page 46, Section 1.2.3.1, OU1 Data Gaps. Please include areas where principal threat waste has been identified or may be present as an OU1 data gap. This includes, but is not limited to, the following areas: TT-21/MW-229; GP18-09/TT-22; GP19-09; GP20-09/TT23; TT-9/GP15-09/VAS-8; VAS-9/GP-13; TP-3; MW-210; the LNAPL; and all OU1 UST areas. These areas will need to be fully evaluated to determine whether excavation and/or treatment is warranted consistent with EPA policy and guidance.

98. Page 47, Geophysical Anomalies. Please indicate which OU1 geophysical anomalies CRA currently plans to investigate and characterize further during remedial design to determine whether excavation or treatment of the material is warranted consistent with EPA policy and guidance. The specific locations should be shown as an overlay on the geophysical survey results. Areas where CRA believes anomalies are due to rebar, concrete, or scrap metal, or something other than drums, must be verified in the field through actual test pit investigations.

99. July 2010 Comment 70 Not Fully Addressed in Background Metals Concentrations on Page 47. Please revise as requested. How will background metals samples be used in the OU1 presumptive remedy? Page 24, Background Metals Concentrations: The concentrations of lead driving the direct contact risks at the site - as high as 17,700 mg/Kg - are not due to background concentrations. And the containment remedy is supported by other pathways as well (e.g., contaminant migration to groundwater, landfill materials in GMR floodplain). Are there some areas of the landfill where CRA intends to conduct intensive, systematic sampling to support a quantitative risk assessment showing a specific area of the landfill may not require containment? If this is the case, then background metals concentrations may be relevant. Please explain with

more specific information (e.g., what properties does CRA plan to reassess, etc.) or delete this as a data gap. Background concentrations for soil in GMR floodplain areas is appropriate, but this will be addressed in OU2.

100. Page 49, Section 1.2.4, Contaminant Fate and Transport, Paragraph 1, Line 2: Please revise "the following media" to "the following OU1 media".

101. Section 1.2.5.1, Risk Characterization, Pages 51 to 55. This section needs to be re-written consistent with the data and pathways in EPA's Streamlined Risk Assessments in previous comments, including, but not limited to, potential impacts to the Quarry Pond and GMR, potential risks from LFG including methane and NMOCs (which will remain a potential risk even if unacceptable concentrations are not found during the VI study, especially once the landfill is capped). Also, the landfill is within a sole source drinking water aquifer and is in a secondary wellhead protection area so risk-based residential drinking water levels and MCLs are relevant.

102. Risks to Groundwater, Pages 53 to 55. This section presents the opinion that the soil contamination decreases with depth (in some cases to less than groundwater protection criteria), which presents sufficient evidence to conclude that these contaminants are not leaching to groundwater. This opinion is presented without justification, and may have no basis in fact. As an example (not specific to the site), soil analysis for arsenic has a detection limit approximately 1 mg/kg (part per million levels). Given a hypothetical case of elevated arsenic in shallow soils, infiltrating precipitation that leaches arsenic from shallow soil and migrates to groundwater could not be detected in deeper soil samples at the groundwater MCL of 10 ug/L (part per billion levels).

Furthermore, CRA's landfill material sampling, soil gas and groundwater sampling was very limited, given that this is an 80-acre landfill, and was not conducted at adjacent locations to provide data that can be correlated. Additionally, the specific chemicals discussed as having been detected above soil levels for groundwater protection have, in fact, all been found in on-site groundwater samples. Additionally, benzene and chlorinated solvents, which are not discussed in this section, have also been found at high levels in all three media. This entire section must be revised to provide an accurate discussion.

103. Section 2.2, RAOs, Page 57, Bullet 4: Not all wetland areas have been delineated and some areas may be found to not classify as wetlands. Change to "Remediate contaminated wetland areas, as identified through a wetland survey, within OU1..."

104. Section 2.2.2, Contaminant Sources, Page 60, Bullets. Please revise these bullets to separate soil, waste and fill into two categories: 1. Large volume of

relatively low-level threat soil, waste and fill; and 2. Principal threat waste that warrants excavation and/or treatment consistent with EPA policy and guidance (e.g., LNAPL, drums containing liquid or hazardous waste; other principal threat waste that meets the conditions for warranting excavation and/or treatment indicated in OSWER 9355.0-49FS). Threats that need to be considered include, but are not limited to, threats to groundwater, including threats to groundwater from waste that is or may be in contact with groundwater; threats to the Quarry Pond and GMR through erosion or during flood events; threats to landfill gas and through vapor intrusion; and threats to on-site receptors due to the proximity of the waste to general use areas (e.g, principal threat waste near buildings, sewer and utility lines, etc.).

105. Page 60, Paragraph 3, Sentence 1: There is a reference to Section 1.2.3.2. There is not a Section 1.2.3.2. in this document. Should this be Section 1.2.3? In any case, please revise the RI/FS to remove this entire sentence from the report, since there should be no "current sources of contamination at the Site,

which differ in some respects from the affected media described" elsewhere in any section.

106. Page 60, Paragraph 4, Sentence 1: Change "...the Site operated as a landfill, accepting non-hazardous fill and waste materials" to reflect what has actually been seen through Site investigations, including LNAPL, USTs, drums and RCRA hazardous waste.

107. Page 60, Paragraph 4, Sentence 2: Change "CRA characterized much of the fill and waste material of the site" to "CRA characterized discrete areas of landfill material at the site. CRA did not characterize any landfill material below the water table at test pit and test trench locations (visually or chemically); and CRA did not chemically analyze any landfill material below the water table at VAS locations (which did not coincide with test pit and trench locations)."

108. Page 60, Paragraph 4, Line 8: See previous comments. Since CRA only collected 5 samples for TCLP analysis from the 80-acre landfill and did not investigate the nature and extent of the TCLP characteristic hazardous waste that was found any further; and since 2 of the samples that were hazardous were composite samples taken from materials 200-300 feet apart and 350 to 1,350 feet apart, the statement "There is also evidence of small isolated areas of the Site where TCLP concentrations in soil/waste samples were greater than the applicable TCLP criteria" is not defensible and must be revised to indicate where the material was found and to clarify that the extent of the hazardous waste was not determined.

109. Hot Spots, Page 61, Paragraph 3, Line 5. The correct citation for this

reference is EPA 1993, not EPA 1991. Please correct.

110. Hot Spots, Page 61, Paragraph 3, Lines 8 to 10: See previous comments including EPA Comments 104 and 108 and revise. Principal threat waste and other areas where principal threat waste may be present have been identified at the site and will need to be investigated further during remedial design to determine if these materials will warrant removal or treatment consistent with EPA 1993. The solid waste landfill cap remedy only applies to the large volume of relatively low-level threat waste material at the site. Liquid waste, drums with hazardous waste, and other principal threat waste that warrants removal or treatment consistent with EPA 1993 can not be addressed by the solid waste containment remedy.

111. July 2010 Comment 82 Not Addressed in Hot Spots on Pages 61-63. Fill/Waste and Impacted Shallow Groundwater Sections were removed, but hot spots were not addressed. Based on the limited OU1 investigation, additional investigation is warranted in the following areas: TT-21/MW-229; GP18-09/TT-22; GP19-09; GP20-09/TT23; TT-9/GP15-09/VAS-8; VAS-9/GP-13; TP-3; MW-210; LNAPL; all OU1 UST areas; and in all areas where geophysical anomalies were identified (and to confirm CRA statements that anomalies are due to scrap metal, concrete, rebar, etc., and not drums). Please revise.

(ORIGINAL COMMENT) Page 43, Fill/Waste Material: See previous comments. CRA did not conduct systematic sampling (horizontally or vertically) at the 80 acre landfill with up to 36 feet of landfill material. The analysis presented in this section is based on visual data, not chemical data. CRA did not characterize any landfill material below the water table at test pit and test trench locations (visually or chemically); and CRA did not chemically analyze any landfill material below the water table at VAS locations (which did not coincide with test pit and trench locations).

Since CRA has not provided any defensible data and analysis to indicate that landfill contaminants are only present in what CRA considers to be "waste," and are not present in what CRA considers to be "fill" - since the landfill is a heterogeneous mixture of landfill materials – please revise this section to simply estimate the total volume of "landfill materials" at the Site (i.e., the volume of material at the Site that is not undisturbed, native material – apparently 37 million cubic feet) and delete the rest of this section.

Also, CRA's OU1 investigation indicates there are several areas of the site that may be "hot spots" (see subsequent "hot spot" discussion in FS), and that additional investigation is warranted in these areas during RD or as part of OU2, to evaluate whether these are hot spots such that treatment or excavation would be more appropriate. CRA has proposed further investigation in some of these

areas (e.g., in the vicnity of MW-210 (TCE 260 ug/L), in the vicinity of VAS-9 (TCE 5,100 ug/L) and in the vicinity of MW-229 (TCE 70 ug/L). However, CRA's "hot spot" investigation did not include laboratory soil sampling for TAL/TCL parameters, TCLP analysis or soil gas sampling. Also, CRA's proposed "hot spot" investigation also did not address other areas of the Site where a "hot spot" investigation is warranted, since CRA did not evaluate the extent of contamination identified in these areas further.

Based on the limited OU1 investigation, additional investigation is warranted in the following areas:

This includes the following areas: TT-21/MW-229; GP18-09/TT-22; GP19-09; GP20-09/TT23; TT-9/GP15-09/VAS-8; VAS-9/GP-13; TP-3; and MW-210.

112. Page 62, Paragraph 1: The sentence states "USEPA expressly excludes groundwater from the definition of a principal threat waste (USEPA 1991b). It is excluded as source material, however, EPA's Guide to Principal Threat and Low Level Threat Wastes states: "Contaminated ground water generally is not considered to be a source material although non-aqueous phase liquids (NAPLs) may be viewed as source materials" The reason given for this is because "The NCP establishes a different expectation for remediating contaminated ground water (i.e., to return usable ground waters to their beneficial uses in a time frame that is reasonable given the particular circumstances of the site)." Also, the reference for USEPA 1991b is not included in Section 6. Please revise.

113. July 2010 Comment 84 Not Addressed on Page 62, Paragraph 2. The section heading was removed but the information in this paragraph still requires correction. Impacted Shallow Groundwater, Page 44, Paragraph 1, Line 1: See previous comments and change "waste and fill material" to "landfill material".

114. July 2010 Comments 85 to 87 Not Addressed on Page 62, Paragraph 2: The section heading was removed but the information throughout this section still requires correction. CRA has not provided any defensible evidence to indicate that groundwater is not contaminated and that groundwater contaminants are not migrating to deeper groundwater; or that landfill contaminants are not posing a threat to landfill gas. Benzene, chlorinated solvents and naphthalene have been detected at high levels in landfill material, soil gas and groundwater (see EPA's Streamlined Risk Assessments in previous comments). Other chemicals, such as arsenic, lead, benzo(a)pyrene and PCBs have also been detected at high levels in landfill material and in groundwater (even with CRA's limited investigations). CRA's statements about materials being readily contained does not consider contaminant pathways to landfill gas and indoor air; or that that during high water table events (and CRA's transducer data will provide some additional data for this), landfill materials that are normally above the water table become inundated and in direct contact with groundwater. The solid waste cap

will not address these pathways, which must be taken into consideration. Please revise.

(ORIGINAL COMMENT 85) Impacted Shallow Groundwater, Page 44, Paragraph 1, Lines 3 and 4: CRA has not provided any defensible evidence to indicate shallow groundwater contaminants are not migrating to deeper groundwater, which is indicated by: downward vertical gradients at the Site at both nested well locations; by TCE and other chlorinated solvents in landfill material and soil gas, and TCE in shallow groundwater; and by the TCE in shallow and deep groundwater at VAS-9, and TCE breakdown products in deep groundwater. Please revise as follows: "The impacted shallow on-Site groundwater is a ~~potential~~ source of on-Site deep groundwater impact and off-Site groundwater impact (shallow and deep).

(ORIGINAL COMMENT 86) Impacted Shallow Groundwater, Page 45, Paragraph 3: This paragraph must be revised to include the potential hot spot areas requiring further investigation identified in previous comments (TT-21/MW-229; GP18-09/TT-22; GP19-09; GP20-09/TT23; TT-9/GP15-09/VAS-8; VAS-9/GP-13; TP-3; and MW-210).

(ORIGINAL COMMENT 87) Impacted Shallow Groundwater, Page 45, Paragraph 3: See previous comments. CRA knows where groundwater contamination is at sampled locations, and knows where it isn't at sampled locations (although there is some uncertainty because CRA did not install permanent wells at these locations to evaluate actual VOC, arsenic, lead and other chemical concentrations). However, CRA did not conduct a thorough enough investigation (spatially; by not defining contaminated areas further; by not installing monitoring wells at all VAS locations where shallow groundwater contaminants were detected – VOCs, arsenic, lead and other contaminants; and by not conducting VAS in areas with high levels of landfill material and landfill gas contamination) to state "the locations where CRA has identified contaminants in groundwater that pose a risk of greater than 1 x 10-3 are discrete and localized to small areas, with the absence of similar contaminants in shallow groundwater near adjacent monitoring wells" or that "these data indicate that the groundwater areas of concern are relatively small and discrete, their presence "or removal" does not significantly affect overall Site conditions."

Please delete these sentences from the FS and rewrite the paragraph to discus (not negate) the potential hot spot areas requiring further investigation identified in previous comments.

115. Page 62, Last Paragraph: The statement that no principle threat wastes or hot spots, as defined by USEPA 1991 have been identified in OU1 is false. The hot spot areas requiring further investigation have been identified in previous comments. USEPA 1991 also considers NAPL to be a potential principal threat

waste to be addressed.

116. Page 63, Paragraph 1. Hot spots are identified and need to be investigated. A discussion of what constitutes principal threat wastes and what will be done when they are encountered must be included.

117. Page 63, Section 2.3, General Response Actions. Please revise this section to include the specific general response actions for each media to be addressed, including the large volume of relatively low-level threat material that the solid waste containment remedy applies to; and liquid waste, drums containing liquid or hazardous waste, and other principal threat waste that warrants excavation or removal consistent with EPA 1993, that may be encountered when these areas are investigated during remedial design, that the solid waste containment remedy does not address. See previous Comments, including Comments 104, 108, 110 and 114.

116. Page 63, Section 2.3, General Response Actions, Institutional Controls, Lines 1 and 2: Please change "isolate potential receptors from COCs" to "reduce the possibility potential receptors will be exposed to COCs".

117. Section 2.4, Identification and Screening of Technology Types and Process Options, Pages 64 to 70. This section will need to be rewritten to address previous comments.

118. July 2010 Comment 97 Not Addressed on Pages 65 to 66. No information was included about the Large or Small Ponds, or the Northern Quarry Pond embankment. Please revise. Section 2.4.2.1, Landfill Cap, Page 51, Last Paragraph Continuing on to Page 52: The Large and Small Pond are in the landfill (most likely areas that were not completely filled in) and are intermittent. The FS must evaluate at least one appropriate remedial alternative to contain the materials in these areas; and one appropriate remedial alternative to excavate the contaminated materials from this area (to appropriate standards, including levels for materials in contact with groundwater and ecological standards) and replacing the areas with clean fill. Please revise.

119. Pages 65 to 66, Landfill Cap: There needs to be a discussion within the document of potential hydrostatic uplift and of venting due to communication with rising and falling groundwater levels. A conceptual cap illustration must be used to show how flood events would impact the cap. It should be shown where the cap lies within the 100-year floodplain and the 100-year floodway, as well as other, more frequent flood elevations, including the flood observed this year which appears to be an annual or bi-annual event. Please revise

120. Page 65-66, Landfill Cap: Conceptual drawings of the capping alternatives must be included. The drawings must also show how the various sloping options and embankments for the capping alternatives will look topographically and in cross-sections.

121. Section 2.4.2.2, Monitoring and Passive Venting of LFG, Pages 66 to 68. This section was not revised consistent with the Dispute Resolution Agreement. Please revise this section consistent with the requirements for passive venting systems to be evaluated in the FS outlined in the Dispute Resolution Agreement, as well as EPA's comments on CRA's LFG modeling in Attachment 1, which must be addressed throughout the report. This section is written based on the unfounded assumption that CRA's limited LFG investigation was adequate to evaluate the full nature and extent of the methane and NMOC concentrations at this large, 55-acre OU, where high levels of methane and VOCs have already been identified. This would include, but is not limited to, designing the system to also address NMOCs; evaluating different types of passive systems, not just one; evaluating different treatment options to meet the RAO to "control, and if necessary, treat LFG"; and to provide more information about the landfill gas sampling that will be conducted during RD, as well as how the remedy will ensure unacceptable levels of LFG are not migrating off-site.

122: Page 66-68, LFG: A conceptual drawing of the typical LFG venting systems (at a minimum, pipe vents and trench vents) being evaluated must be included. Pipe vents may not be compatible with existing land use in the business areas, especially if several vents are needed, or with potential future appropriate use of the vacant area. The FS must also discuss what will be done to make sure any LFG venting into the atmosphere would not pose a risk to on-site receptors or an explosion hazard (e.g., workers having a cigarette break near a vent where the methane concentration coming out is above the LEL, since methane concentrations have been detected at the site as high as 26 percent by volume), as well as to comply with ARARs and EPA's Principles for Greener Cleanups that CRA discusses later in the report, especially with regard to greenhouse gas and other air emissions.

123. Page 67, Section 2.4.2.2, Top Bullets: Please add the following text to this section, "For any occupied structure located within one thousand feet of the limits of waste placement where permanent monitors or punch bar stations cannot be properly located, explosive gas alarms shall be placed in the occupied structure."

124. Section 2.4.2.2, Monitoring and Passive Venting of LFG, Page 67, Paragraph 3: The text states that passive LFG vents will be installed in discrete locations where methane has been previously measured at 100 percent of the LEL. There are 5 locations listed for passive vents, the cost estimate includes 20

vents. Even if this approach seemed reasonable, there are two locations that had levels close to 5%, GP13-09 and GP16-09, which are likely to see increased levels of methane once a cap is in place. However, the real method for determining where passive LFG vents shall be placed should involve a screening process undertaken during the remedial design process. The Dispute Resolution Agreement stated, "The alternative descriptions of the passive landfill gas system in the revised OU1 FS Report shall include, but not be limited to, information concerning the type, configuration, and locations of each system evaluated, including potential monitoring points, with the final details to be determined as part of the remedial design process." The Streamlined RI/FS previously stated in Section 1.2.3.1 under LFG and Soil Vapor, "However, empirical data should be collected to confirm the modeled predictions with respect to LFG and to assess soil vapor migration." The last paragraph in this section does say that there will be ongoing explosive gas monitoring, but this is only near buildings/structures. The report also says "exact number and locations of passive vents will be determined during RD and modified as needed in the future based on results of ongoing monitoring." Once the cap is placed there will be no ongoing monitoring except at the few vent locations due to the valid concern of destroying the cap integrity. Additionally, the monitoring should not be done when groundwater levels are falling because fresh air will be drawn into the subsurface. The most dangerous period for surrounding structures is when the groundwater is rising and pushing LFG upward. Please revise.

125: Page 68, Section 2.4.2.3, Soil Vapor. It still is not clear why CRA considers the media to be addressed in this section "soil vapor" and not LFG, since the NMOCs were detected at high concentrations in landfill material and groundwater, both of which may be acting as a source to LFG contamination. The term soil vapor seems to more appropriate for off-site areas, where there is no LFG, and the source of the vapor contamination is groundwater to soil to indoor air. Please revise.

126. Page 68, Section 2.4.2.3, Soil Vapor, Paragraph 3. Include sub-slab venting locations in the monitoring program that is established.

127. Page 68, Soil Vapor: O&M will need to continue longer than two years. The length of time could be as long as the landfill cap is in place, since even with the additional investigations to address principal threat waste, unidentified sources of methane and VOCs could remain in the landfill material and in groundwater for a long time. The O&M will need to continue until it is demonstrated that contaminant concentrations will remain below acceptable risk levels on a permanent basis. Please revise.

128. Page 68, Section 2.4.2.4, Leachate Monitoring: This section will need to be revised to address previous comments, especially concerning the potential for

leachate generation along the GMR and Quarry Pond Embankments during flood events.

129. Page 69, Section 2.4.2.5, Valley Asphalt Wells: As with LFG, the Valley Asphalt wells will need to be monitored on a quarterly basis until it is demonstrated that contaminant concentrations in the wells will remain below risk-based levels and MCLs on a permanent basis. Also, it is likely that the wells will need to continue to be monitored on some periodic basis after that as part of the statutory five year review process.

130. Page 69, Section 2.4.2.8, Engineering Controls: Make it clear where temporary and permanent fencing would and would not be considered for use, especially since part of OU1 is occupied by businesses and the GMR recreational trail, and currently vacant areas may one day be redeveloped. If this section is only discussing temporary fencing, then make it clear.

131. Section 2.4.2.9, Institutional Controls, Page 70: Delete these paragraphs and add a discussion on the Ohio Environmental Covenants Act.

132. Section 3.0, Development of Alternatives: Please revise this section consistent with previous comments on Section 2; and to include three capping alternatives: MatCon 1.5 percent slope/OEPA SW 3 percent slope; OU-wide OEPA SW 3 percent slope; and OU-wide OEPA SW 5 percent slope (baseline).

A variance will be needed for slopes other than 5 percent. An ARARs waiver will be needed for the MatCon material. The HELP model must be run for each alternative to help support the technical equivalency ARARs waiver. Additional comments on CRA's HELP model are in Attachment 2, and must be addressed throughout the report. The report must also indicate that the slope for the SW cap will be minimized as much as possible based on the results of a stability analysis to be conducted during remedial design, to allow for future use of the property that is compatible with the cap.

133. Page 73, Section 3.2, Screening of Alternatives, Paragraph 2: Sentence 2 stating that "The lack of significant quantities of decomposable organic waste... the data indicating that migration of contaminants from waste material to groundwater is not a significant pathway, and the limited risks to receptors..." must be reworded to present the findings as amended in earlier sections of the document.

134. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75, Paragraph 2. The preferred minimum cross-slope for MatCon surfaces such as caps is 1.5% (MatCon website, http://www.matcon-inc.com/FAQ.htm). How flat can a site be for paving with MatCon? Is there a minimum slope required? Please change the

slope to match this.

135. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75. MatCon has a proprietary design whereby the edge of an HDPE membrane could be tied to the MatCon by sandwiching it between two layers of MatCon, thus providing a continuous cap without special anchors. (http://www.matcon-inc.com/FAQ.htm#Can MatCon be used in conjunction with conventional geomembranes?) Provide a description and conceptual detail drawing of this.

136. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75. For point loads on a 4" MatCon cap as generally constructed, the maximum is 100 psi. (http://www.matcon-inc.com/FAQ.htm#What is the load limitation for MatCon?) State what load limits the MatCon cap will be subjected to based on the anticipated traffic and state that this will be calculated again and finalized during the design phase along with other design parameters required for obtaining the MatCon warranty. What is the maximum load that MatCon can be built to withstand due to the loads at Valley Asphalt? Describe how Valley Asphalt will be required to operate their equipment and pile height to meet the restrictions that will placed on them to protect the cap. B&G Trucking and Barnett Construction can also have heavy equipment traffic. Please address.

137. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75: During construction, a special mastic-coated geotextile is used in a manner similar to roof flashing to seal against building foundations and other structures that may be present. When the MatCon Hot Mix Asphalt is installed, it melts the mastic, which bonds to the structure and the new MatCon, providing a permanent seal. (http://www.matcon-inc.com/FAQ.htm#How do you seal around features such as concrete slabs, foundations, posts, light standards, pipes, and other protrusions?) Provide a description and conceptual detail drawing of this.

138. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75: Describe who is responsible for inspection, repairing, and maintenance of the MatCon and the life span of the product. Describe how pavement striping can affect the surface and what controls will be put in place to prevent damage from this or other actions by onsite businesses.

139. Section 3.2.2, Alternative 2, Asphalt and SW Caps, Page 75: Discuss how the asphalt cap will tie into Dryden Road to prevent LFG from traveling through road base materials and the backfill of utility trenches.

140. Section 3.2.2, Alternative 2, Variance/Waivers, Page 75, Last Paragraph: Change the last sentence that reads, "CRA would also request a variance/waiver to reduce the required minimum slope to one percent" to indicate that it is only the asphalt cap that is being discussed and revise the slope to 1.5 percent.

141. Section 3.2.2, Alternative 3, SW Cap, Page 76, Paragraph 3. Change the last sentence from "Based on the overall conservativeness of this option..." to "Given the high performance of this cap design based on HELP modeling..." This will be consistent with what was stated for Alternative 2 without giving the impression that this alternative is so far-fetched or ridiculous.

142. Section 3.2.3, Alternative 3, SW Cap. It is not understood why a slope variance would be sought for Alternative 2 but not Alternative 3. If the two alternatives are to be seriously compared, then the assumption that Alternative 2 obtained a variance should also be made for Alternative 3. By not requesting a variance for Alternative 3 the comparison factors, implementability, cost, etc., are going to be obviously disproportionate to that for Alternative 2. Addressing Comment 132 should resolve this.

143. Section 3, General. Discuss stormwater runoff under all alternatives and how much will be present based on modeling. Also discuss what compliance with ARARs will require, i.e. NPDES permit, sedimentation basin, etc.

144. Section 3, General. Consisntent with RAOs, this section must be revised to discuss treatment options for the LFG gas being vented from the cap. This may be required by ARARs, and would also be consistent with EPA's Principles for Greener Cleanups cited later in the report (e.g., greenhouse gas emissions). Also, discuss methods to prevent oxygen from entering the landfill when groundwater levels beneath the cap are falling and create vacuum conditions.

145. July 2010 Comment 115 Not Addressed in Section 4, Detailed Analysis of Remedial Alternatives, Pages 77 to 98. This comment was not addressed. Different passive venting options, LFG treatment options, and excavation and treatment options for liquid waste, drums containing liquid or hazardous waste and other principal threat waste that warrants excavation and/or treatment consistent with EPA policy and guidance, must be evaluated as separate components so EPA can select the best remedial component for each area/media to be proposed as the best, most cost-effective overall cleanup alternative for OU1.

(ORIGNIAL COMMENT) Section 4.0, Detailed Analysis of Remedial Alternatives, Including All Subsections and Alternatives, Pages 88 to 137: This entire section, including all subsections, the alternatives, the analyses and the evaluations, must be completely re-written consistent with all previous FS comments. Also, please re-write each alternative so that the various remedial components for each area/media are analyzed and can be compared, with detailed cost information including capital, O&M and present worth costs, to provide side-by-side comparisons for that specific component. For example, evaluate two or more different waiver-justifiable asphalt caps for the business areas, that can then be

paired with either of the two or more different groundwater containment systems; that can be paired with two or more ARARs-compliant active landfill gas control systems; that can be paired with either of the technologies for focused groundwater remediation; that can be paired with either containment or excavation and clean fill for the Large and Small Ponds; that can be paired with either of two or more alternatives for the submerged landfill material embankments of the Quarry Pond; that can be paired with either of two or more ARAR-compliant or waivers-justifiable remedial components for the landfill materials and contaminated sediments in the Quarry Pond; that can be paired with an ARARs-compliant OEPA solid waste cap for remaining vacant areas. That way, EPA can then select the best remedial component for each area/media to be proposed as the best, most cost-effective overall cleanup alternative for OU1.

146. July 2010 Comment 117 Not Addressed in Section 4.2, Individual Analysis of Alternatives, Pages 79 to 87. This comment must be addressed as previously requested. (ORIGINAL COMMENT) Section 4.2, Detailed Analysis of Remedial Alternatives, Including All Subsections and Alternatives, Pages 88 to 124: For the asphalt and ARARs-compliant solid waste cap remedial components, please provide additional, specific, accurate and defensible details, including cross-sections, as to what the cap will look like over the steep embankments in the GMR floodway that are comprised of landfill material, and what the cap will look like over the steep landfill material embankments of the Quarry Pond (at least on east, north and west sides of Quarry Pond). The details must include information about what regrading is needed; whether some amount of landfill material in the GMR and Quarry Pond embankments needs to be excavated out and replaced with clean fill before being capped; and what additional measures will be needed since the landfill materials that constitute the GMR embankment are in the GMR Floodway, as well as the 100 year floodway and the 100 year floodplain, and since the Quarry Pond embankments (and other parts of the landfill) are also in the 100 year floodplain. Also, please include additional information as to how the waivers-justifiable asphalt caps would be "tied" into the ARARs-compliant solid waste cap; and how the solid waste cap over the unsubmerged landfilled materials in the Quarry Pond and unsubmerged part of the embankments of the Quarry would "tie" into the remedial components for submerged landfill materials and contaminated sediments in the Quarry Pond. Also ARARs associated with any of these issues must also be discussed.

According to the RI/FS Work Plan, various flood elevations applicable to the Site are:

Normal Pool: Elevation North of Dryden 713 ft-msl; South of Quarry Pond 709 ft-msl.

10 Year Flood: Elevation North of Dryden 729 ft-msl; South of Quarry Pond 726 ft-msl.

50 Year Flood: Elevation North of Dryden 733 ft-msl; South of Quarry Pond 730 ft-msl.

Also, please include a figure showing a line around these elevations on the Site Survey; and show where they are in the slideslope capping cross-sections requested above. Please use the new transducer data to show approximate elevations for the flooding seen this March, which seems to be an annual or bi-annual flood event.

147. Section 4.2, Individual Analysis of Alternatives, Pages 79 to 87, and Section 4.3, Comparative Analysis of Alternatives, Pages 87 to 95. These sections and subsections will need to be completely re-written consistent with previous comments, including comments concerning the media and risk pathways to be addressed, capping options, passive venting options, LFG treatment options, embankment options, material that will need to be excavated or treated, monitoring, etc, as well as OEPA's comments regarding ARARs.

These sections of the FS will also need to be rewritten to provide significantly more detail in sections as to how various alternatives and remedy components will meet the statutory requirement for overall protection of human health and the environment, as well as EPA's criteria for long-term effectiveness and short-term effectiveness. This analysis is especially critical for, but not limited to, options that allow current businesses to remain on-site, and which will allow for appropriate reuse over vacant areas; as well as options that will be impacted by erosion and flooding. Adjacent businesses and houses, and the GMR and recreational area adjacent to the site must also be considered. Part of this discussion should include specific details on the RAOs, and thoroughly explain how each component of the remedy alternatives being considered would or would not address each RAO.

These sections will need to be rewritten to provide significantly more detail explaining what specific provisions of OEPA's ARARs will need to be waived for a MatCon cap, including the specific citation and a full text description of what OEPA's actual requirements are, and provide a lot more detail on how the MatCon cap component will meets the technical equivalency of these requirements and support a waiver.

Also, even though groundwater is not part of OU1, there must be a discussion on how capping of the site could make any groundwater options involving source removal, installation of additional monitoring wells, or injection treatments more difficult to implement, and what will be done to protect and repair the cap during the OU2 investigation, and, if needed, subsequent construction. This is

especially true in areas where the FML is to be placed.

148. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 82, Paragraph 2. The statement, "CRA does not expect that there will be a need to replace technical components of Alternative 2 other than potential routine replacement of monitoring instrumentation and maintenance of the SW Cap and the Asphalt Cap" needs to be changed to address the lifespan of the MatCon cap of 30 years. Some weight must be factored into building a SW cap once and a MatCon cap every 30 years.

149. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 82, Paragraph 5. Add a sentence following, "however, the vegetation will require ongoing maintenance and care to ensure that the vegetation remains viable and deep-rooted plants that could compromise the cap don't become established" to also include the work that will be involved in maintaining the asphalt cap and that it will need to be replaced every 30 years.

150. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 82, Paragraph 6. CRA needs to mention the short term risks with removing enough surface material, up to 10" depth, around the businesses to get an asphalt cap installed.

151. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 82, Paragraph 6, Sentence 2. Add "and the Small and Large Ponds be destroyed" similar to what is described for Alternative 3 (on Page 85, Paragraph 6).

152. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 82, Paragraph 5. Change "Alternative 2 could be constructed within 2 to 3 years" to "The construction period for Alternative 2 is estimated at 2 to 3 years".

153. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 83, Paragraph 3. The statement that Alternative 2 requires no special techniques, materials, or labor to construct the caps does not seem valid when talking about the MatCon cap.

Include information on the special compaction, material, and labor for a MatCon cap.

154. Section 4.2.2, Alternative 2, MatCon/SW Cap, Page 83, Paragraph 3, Sentence 3. Remove the word "minor" from before technical problems since it is expected that minor problems would not cause major delays and mainly because this word was not used before technical problems in the same paragraph and same sentence under Alternative 3, which gives the impression that all problems under Alternative 2 are minor but those under Alternative 3 are likely all major.

155. MatCon/SW Cap, Page 83, Cost, Paragraph 1: Add "Additionally, the Small and Large Ponds would need to be backfilled to grade (with clean fill for materials that would be in contact with the water table), prior to implementing any

remedy."

156. Section 4.2.2, Alternative 2, MatCon/SW Cap and Throughout FS. The FS must be revised to ensure that all similar remedy components have a similar discussion throughout the report. For example, the Large and Small Ponds will be closed in all capping alternatives, not just with the OU1-wide SW cap; and all alternatives, especially the SW alternatives will require the same degree, or varying degrees, of regarding. Please revise.

157. Section 4.2.3, Alternative 3, SW Cap. The statement made for Alternative 2, "A variance with respect to slope for the caps would further result in decreased greenhouse gas and acid rain precursor emissions due to reduced truck and construction vehicle activity" should have a similar statement included under Alternative 3 and other alternatives/components where this would apply.

158. Section 4.2.3, SW Cap, Page 84, Last Paragraph. Change "As Alternative 3 requires the destruction of the vernal wetlands (the Large and Small Ponds provided they are determined to be wetlands), approval would be required..." to what is stated under Alternative 2, which simply states " Approval may be required..."

159. SW Cap, Page 85, Paragraph 1. As previously stated, the discussion of the pros and cons of similar alternative components must be similar throughout the FS.

160. SW Cap, Page 85, Paragraph 2. This sentence states "The proposed cap design would be ARAR-Compliant (OAC 3745) and would eliminate relevant exposure pathways." It is unclear why a slope variance is not being sought under Alternative 3 based on the Page 84 statement " A variance with respect to slope would minimize the disruption to the surrounding businesses and community..." The same variance sought under Alternative 2 with respect to the SW cap should be sought under Alternative 3. On Page 89, CRA states, " Alternative 3 essentially complies with the ARARs; although, CRA requests that

USEPA/Ohio EPA consider granting a waiver/variance with respect to the slope of the cap.

161. SW Cap, Page 85, Paragraph 6: Remove the words "permanently reduced" with regards to evapotranspiration. This is consistent with what will be seen under Alternative 2, the MatCon/SW cap, and should not be portrayed as worse.

162. Section 4.2.3, SW Cap, Page 86, Paragraph 2. Change "Alternative 3 could be constructed within 3 years" to "The construction period for Alternative 2

is estimated at 3 years".

163. Section 4.3.2, Overall Protection of Human Health and the Environment, Page 87 to 88. This assessment considers direct contact exposure as the relevant exposure pathway. Revise the assessment to include exposure to LFG and indoor air, not just landfill materials, to the on-site businesses, since these risks widely vary between alternatives. Overall protection of human health and the environment must also be revised to discuss all relevant pathways (i.e., risks to groundwater, the adjacent recreational area, GMR and Quarry Pond surface water and sediment). See Comment 147.

164. Page 87, Overall Protection of Human Health and the Environment. The statement "Alternatives 2 and 3 provide a similar level of overall protection of human health and the environment" needs to be revised based on LFG and indoor air impacts to on-site businesses that will remain under Alternative 2. What will be done to make sure current and potential future receptors are thoroughly protected (in detail)?

164. Page 90, Table of Long Term Effectiveness: See Comment 147. This section and table will need to be re-written and re-evaluated.

165. Page 92, First Table: See Comment 147. This section and table will need to be re-written and re-evaluated.

166. Page 92, Paragraph 1. See Comment 147. This section will need to be re-written and re-evaluated. However, the statement that Alternative 1 (no action) would not reduce volume of LFG is not accurate. The volume of LFG is reduced the same way it is under current Alternatives 2 and 3 except it vents through an unknown path of least resistance instead of the LFG gas network installed with the cap.

167. Page 92, Second Table. Remove "which already provide some protection" from the table.

168. Page 93, Paragraph 3. The statement "Technically, Alternative 2 and 3 can both be implemented within similar time frames, i.e., approximately 3 years" seems to be inconsistent with the earlier statement that Alternative 2 could be up to an entire year less (33%) to construct.

169. Page 93, Last Paragraph. Explain why alternatives that will force existing businesses to close and relocate are assigned a "Low" implementability rating. Although this is not what Moraine and existing property owners and businesses want, it seems that the relocation of a business is not beyond being implementable. Please discuss.

170. Page 94, Paragraph 3: See earlier comment on the statement that

Alternative 2 requires "no special techniques, materials, or labor to construct".

171. Section 4.3.7. This section needs to be re-written when the same slope variance as requested under Alternative 2 for a SW cap is included.

172. Section 5, Summary; and Executive Summary at Beginning of Document, Pages i to ix: These sections must be revised consistent with all comments on the RI/FS.

173. Tables: Please revise all Tables consistent with all comments on the FS.

174. Table 2.4, Evaluation of Process Options: This table must be revised consistent with all previous comments.

175. Table 3.1, Proposed Cap Designs: The footnote stating "Asphalt cover includes two-inch asphalt base layer, and two-inch MatCon asphalt surface layer" is not consistent with a MatCon cap. A MatCon cap is four inches of MatCon placed in one pass. Figure 3.1 shows the correct 4" depth of MatCon asphalt.

176. Table 3.2, Summary of Required ARAR Variances: The table does not list the variance for the SW cap slope.

177. Table 4.1, Estimated Remedial Costs: It is not understood how the cost for construction of off-set wetlands to mitigate destruction of Large Pond and Small Pond is different between Alternatives 2 and 3. Please revise.

178. Table 4.1, Estimated Remedial Costs: It is not understood how the cost for stormwater controls is less for Alternative 2 when it will have more runoff than Alternative 3, faster runoff than Alternative 3, and runoff from industrial sites which would not be there under Alternative 3.

179. Table 4.1, Estimated Remedial Costs. It is not understood how the cost for vegetation control, groundwater sampling, leachate, soil vapor, and LFG monitoring, and general Site maintenance is more under Alternative 3 than Alternative 2. Alternative 2 includes monitoring of indoor air at the businesses and additional LFG monitoring and maintenance of gas alarms, which Alternative 3 does not. It is not understood how vegetation control differs under O&M and cap maintenance. Please revise.

180. Table 4.1, Estimated Remedial Costs. Since the cost estimate only goes out 30 years, the replacement of the MatCon cap as estimated by CRA at every 40 years is not fully included in the costs.

181. Tables. Please include a table showing CRA's hazardous waste analysis results for CRA's TCLP and other waste characterization sampling, and the Valley Asphalt data results (TCLP and regular analysis). This data could not be

found in Table 1.4, Soil Sampling Analytical Results.

182. July 2010 Comment 119 Not Addressed. Figures 1.4 and 1.5 were not revised as requested, and instead, were removed from the report. Please revise these figures as previously requested and include this figure in the RI/FS. (ORIGINAL COMMENT) Figures: Please revise all figures consistent with all comments on the RI/FS. Also, as explained in previous comments, please merge Figures 1.4 and 1.5 into only one figure showing the depth of the landfill, and remove the "waste" depth contours and "fill" depth contour maps from the FS.

183. Figures. There is no topographic map. Please include the topographic map showing OU1 in Figure 1 of the Dispute Resolution Agreement as a Figure, and show the area north of the recreational trail that will be investigated during remedial design to determine if this area contains solid waste and will be included under the OU1 cap. This investigation and area should also be discussed as a data gap, as the media to be addressed, and in capping alternatives discussions.

184. Figures. The figures showing asbestos and radiation concentrations (and the text) have been removed from the report. Please include these figures and provide a discussion of potential risks from these contaminants. See http://epa.gov/superfund/health/contaminants/radiation/radrisk.htm for evaluating radiation risks. Asbestos and radiation monitoring may still be needed during construction to ensure these contaminants do not become an inhalation hazard. These chemicals should also specifically be identified in the FS sections on short-term risks.

185. App B, Groundwater Elevation Contours: The contours appear to have been software generated, and use the river staff gauge elevations as point elevation rather than water surface elevations. This bends the contours in ways that inaccurately represent groundwater near the river. The software also runs contours through the quarry pond (treat staff gauge as point elevation rather than surface of pond), which contradicts CRA interpretation that the Quarry Pond is groundwater fed. The software also incurs unjustified bends in contours that show unjustified direction of flow along the east side of the Site. For example, the February 9, 2009 shallow flow map shows contour along Dryden Road bending to the south, implying that groundwater east of the site flows onto the site rather than groundwater flowing south or off the site to the east. The data do not justify this contouring pattern. Please revise all contours, and submit figures showing the additional static and transducer data collected this year.

186. HELP Model, General. A waiver from the requirement for a 5% slope for a solid waste cap and 1.5% slope on an asphalt cap has been mentioned in the text; however, the HELP model does not show all of these scenarios. The HELP

model should run calculations on all scenarios (see previous comments) and present these findings in the text. Please address, and see additional comments in Attachment 2.

187. LFG and NMOC Emission Modeling, General. The amount of waste present in the landfill that is used by the model appears low. The waste volume has been based on the percentages found in test trenches that were deliberately placed near the edge of waste to determine waste limits, not waste depths, or representative waste types. It is not discussed whether TP and TT locations stopped at native material, fill, or groundwater. The MW and VAS locations would provide better indication of waste depths. A random selection of CRA's TP locations may also provide some statistical basis for assigning percentages to waste types. According to OAC 3745-76-09, "The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R (the average annual acceptance rate), if documentation of the nature and amount of such wastes is maintained." Unless CRA can provide this documentation, the modeling must be revised, using the total amount of landfill material to calculate R. Please revise the FS to provide a defensible estimate of the volume of waste at the site, and see additional comments in Attachment 1.

ATTACHMENT 1

Comments on Streamlined Remedial Investigation and Feasibility Study - Operable Unit 1 (OU1), January 2011

Landfill Gas

Migration

On page 43, *Landfill Gas and Soil Vapor*, third bullet, Conestoga-Rovers & Associates (CRA) identified the presence of methane and volatile organic compounds (VOCs) in soil gas at elevated concentrations. As such, further investigation is warranted to confirm the potential risk of landfill gas (LFG) and soil vapor migration off site; the potential risk of exposure through inhalation in building structures; and compliance with Ohio Administrative Code (OAC) 3745-27-12 (explosive gas) and OAC 3745-76 (non-methane organic compounds). Further site-specific evaluation to define the extent of the LFG impact will be required during remedial design.

This need for additional data is further substantiated on Page 48 which describes how CRA modeled potential LFG generation using equations set forth in Code of Federal Regulations (CFR), Title 40, Parts 51, 52, and 60. Although the modeled emissions were less than regulatory thresholds, CRA stated that empirical data should be collected to confirm the modeled predictions with respect to LFG and to assess soil vapor migration. As such, it is recommended that any LFG or soil vapor mitigation measures such as the passive venting contemplated for OU1 be contingent upon the results of the predesign investigations and Vapor Intrusion Study.

Air Emissions

OAC 3745-76 sets forth requirements for controlling landfill emissions from municipal solid waste (MSW) landfills. OAC 3745-76-03 requires controls at landfills that meet certain conditions, one of which is having a non-methane organic compound (NMOC) emission rate of fifty megagrams per year (Mg/year) or more.

Section 1.2.4.2 discusses the estimated potential production rates of methane and NMOCs using the Scholl Canyon model, which is consistent with the Code of Federal Regulations, Title 40, Part 60, Subpart WWW (the NSPS) and Subpart Cc (Emissions Guidelines [EG]), which was promulgated in OAC 3745-76. The output of this model determines if conditions exist that would require active control measures. The equation used in Appendix C to estimate LFG production is equivalent to the equation specified in OAC 3745-76-09(A)(1)(b) for the case where the actual year-to-year solid waste acceptance rate is unknown, however the default values used were consistent with OAC 3745-76-07.

However, on page 48 CRA states that the model is based on the estimated quantity of putrescible wastes in the landfill observed during CRA's drilling and test pit investigation activities and using knowledge of the historical time period during which waste was deposited. As Section 1.2.3 states that "Waste material was accepted at the Site for over 50 years from the early 1940s until 1996; however, as records prior to 1969 are incomplete, the exact types and quantities are not known," CRA modeled LFG

conservatively by assuming that all fill and waste disposed at the Site is putrescible. The NMOC emission rate was then calculated at less than the 50 Mg/year threshold.

Appendix C only represents conditions under OAC 3745-76-07 (MSW scenario) and should be revised to include the scenario in accordance with OAC 3745-76-09 (acceptance rate unknown).

LFG and Groundwater Interactions

Page ii and page 6 states that the source(s) and extent of groundwater impact have not been fully defined. Interaction between landfill gas and groundwater should be evaluated as part of the predesign investigation, especially when assessing soil vapor mitigation options.

Passive Venting and Monitoring

Section 2.4.2.2 discusses a proposed LFG mitigation system consisting of passive venting within areas of historical waste disposal, at the property boundary, and beneath building foundations of existing structures. CRA states that passive venting is sufficient based on the Scholl Canyon modeling results. Although the current model results show that the limited known conditions do not now indicate the need for an active collection and control system, future vapor intrusion studies and assessments of groundwater and LFG interactions may identify the need for active control measures.

Additionally, OAC 3745-31-02 provides requirements for the installation, modification, and operation of new air contaminant sources at facilities that are not subject to OAC 3745-77 (Title V permit), unless it can be demonstrated it is a de minimis air contaminant source exempted under OAC 3745-15-05. As such, it should be demonstrated that the total source for which passive venting is applied emits less than 1 ton per year of hazardous air pollutants or combination of hazardous air pollutants.

Specific to the passive venting design, CRA states on page 66 that where applicable the vents will be installed such that the perforated piping is located beneath the flexible membrane liner (FML) that would be used in cap construction. Please describe how the depths of the passive vents will be determined.

On page 67, CRA describes a passive soil vapor mitigation system consisting of passive sub-slab soil vapor venting beneath the foundations of on-site buildings. Please describe how these sub-slab soil vapor venting will be constructed under existing buildings to ensure that the integrity of the structure remains intact and is protective of the occupants.

ATTACHMENT 2

Comments on Streamlined Remedial Investigation and Feasibility Study Report, Operable Unit 1 (OU1), January 2011

Appendix D Hydrologic Evaluation of Landfill Performance (HELP) Model

General Comments on Memorandum

The Introduction and Surface Cover Parameters sections of the memorandum refer to seven proposed cap designs, which was presented in the May 2010 Feasibility Study Report. Please update the text to reflect the cap designs presented in the January 2011 Remedial Investigation and Feasibility Study Report.

Model Input Parameters:

Please provide references for the sources of precipitation, temperature, wind speed and relative humidity data.

Please provide the assumptions and sources for using material textures for the various layers used for existing conditions, solid waste (SW) cap and asphalt cap modeling.

Surface Cover Parameters

- Provide assumptions and source for surface slopes and slope length used in the analysis.
- Provide assumptions and source for using a runoff curve number (CN) of 88 for asphalt.
- A surface slope of 5 percent was used to calculate the CN for the SW cap, please correct the text to reflect this value.
- Provide justification for using municipal solid waste with channeling for the analysis rather than typical municipal solid waste (without channeling).
- The HELP model requires an evaporative zone depth of greater than zero in order to run without error. Please provide a description of how this error message was addressed to get valid HELP model run for Asphalt Cap.

HELP Model Input for Asphalt Cap

- Provide sources and assumptions for layer characteristics (porosity, field capacity, wilting point, and hydraulic conductivity) for Layer 1 and Layer 2 (2-inch asphalt surface course and 2-inch base course, respectively).
- Layer 3 is described as a 6-inch gravel layer on Figure 3.1 and in Table 3.1. However, Layer 3 is modeled with material texture #3 (well-graded sand), not gravel. Revise to appropriately model the 6-inch gravel layer (Layer 3) with the correct material texture or provide justification for using this material texture.

OEPA COMMENTS ON

REVISED STREAMLINED OU1 RI/FS REPORT

SOUTH DAYTON DUMP AND LANDFILL SITE

MORAINE, OH

April 19, 2011

Ohio EPA Comments on the Streamlined Remedial Investigation and Feasibility Study Report for OU1, January 2011 (the Report), received by Ohio EPA on February 2, 2011

Notes:

1) The following comments are titled with the report section, the page, and then the paragraph, bullet, and/sentence on the page. Page references in the comments are based on the electronic PDF version of the Report.

2) General comments on ARARs were previously submitted to USEPA on April 1, 2011. These comments are included in this document as Attachment 1.

Comments

1. Due to limited resources, Ohio EPA has focused review of the report on Sections 2 through 5. Ohio EPA will rely on USEPA's review of Section 1.

2. Throughout to the report, the discussion needs to clarify that Alternative 2 includes the use of a "specialty" asphalt, specifically MatCon. When referring to Alternative 2, replace the term "Asphalt Cap" with "MatCon Cap."

3. Section 2.2 – RAOs, p. 56, 9th bullet. This RAO addresses "contaminant leaching to ground water and surface water." Does leaching to surface water mean leaching to surface water via ground water? Please clarify.

4. Section 2.2 – RAOs, p. 57, 1st full paragraph. This report should not restrict, let alone dictate, the mechanisms available to EPA to respond to threats to public health. Please delete this paragraph.

5. Section 2.2.1 – ARARs, p. 59, first three paragraphs. In this section, there are three paragraphs discussing USEPA Green Remediation guidance TBCs. These are the only TBCs mentioned specifically in this section. Please remove these paragraphs from this section. This discussion could be retained by adding it to Section 4.1.1 if the Compliance with ARAR discussion was expanded to discuss each ARAR and TBC.

6. Section 2.2.2 – Contaminant Sources, p. 60, 2nd line. If the term "media" in this sentence refers to the "contaminant source materials" mentioned earlier in the paragraph in the last line of the previous page, please revise to make the language consistent.

7. Section 2.2.2 – Contaminant Sources, p. 60, 2nd bullet. Please clarify if the leachate seeps that are addressed here are surface leachate seeps.

8. Section 2.2.2 – Contaminant Sources, p. 60, 1st full paragraph, 1st sentence. This sentence states that "soil vapor will partially be addressed through passive LFG treatment." Ohio EPA concurs that any soil vapors and landfill gases collected and emitted through the passive venting should be treated.

9. Section 2.2.2 – Contaminant Sources, p. 60, 1st full paragraph, 1st sentence. In addition, this sentence states that "soil vapor will partially be addressed through passive LFG treatment," and "will primarily be addressed external to the RI/FS process." The current risk will be mitigated by isolating receptors from exposure. The vapor intrusion study prescribed by the dispute resolution agreement does not address this contaminant source.

10. Section 2.2.2 – Contaminant Sources, p. 60, 5th bullet. Leachate migration to ground water is listed as being addressed as part of OU2. However, minimizing contaminant leaching to groundwater is an OU1 RAO, as is the RAO requiring treatment or elimination of potential hot spots as necessary to protect human health and the environment. Source area control of groundwater impacted by leachate has been deferred to OU-2, not the leaching of contaminants to that groundwater.

11. Section 2.2.2 – Contaminant Sources, p. 60, 4th paragraph, 2nd sentence. Please change "CRA characterized much of the fill and waste material of the site" to "CRA characterized discrete areas of waste at the site." Also, in the last sentence, delete the phrase "small isolated." Comprehensive characterization of the waste is not practicable. Conclusions cannot be made about the scope and extent of contamination based on the limited investigation conducted to date.

12. Section 2.2.2 – Contaminant Sources, Hot Spots, p. 61, last paragraph, last sentence. Available site data is not sufficient to conclude that RCRA characteristic waste is only present in "small discrete areas." Please delete this sentence. Replace the last sentence on Page 61 with a sentence stating, as discussed by USEPA and CRA, that based on the results of the limited OU1 investigation, additional investigation is warranted in areas identified by USEPA in their comments.

13. Section 2.2.2 – Contaminant Sources, Hot Spots, pages 60 – 63. Ohio EPA concurs with USEPA's comments 8 through 14 on these pages. In summary, hot spots are identified and need to be investigated.

14. Section 2.2.2 – Contaminant Sources, Hot Spots, pages 60 – 63. Following investigation of the hot spot and anomaly areas, it is likely that some areas will warrant treatment or removal. Please add a discussion of how the areas will be evaluated and what actions will be taken.

15. Sections 2.3 and 2.4 (pages 63 through 70) and Table 2.4: These sections and Table 2.4 present the identification of general response actions and the results of the identification and screening of process options and technologies. Section 2.4.1 states: "Table 2.4 provides a list of these general response activities and a preliminary screening of the response activities." Two paragraphs later Section 2.4.1 states: "A summary of the results of this screening process, identifying retained remediation technologies, is provided in Table 2.4." The second from the last paragraph of Section 2.4.1 states: "Details of the initial assessment are provided in Table 2.4." No detail is provided in Sections 2.3, 2.4, or Table 2.4 regarding the identification and screening of general response actions, technologies, or process options. The Report needs to be revised to provide a level of detail for the identification and screening of general response actions, technologies, and process options consistent with EPA's CERCLA Municipal Landfill RI/FS Guidance (guidance). The SOW appended to the ASAOC requires that Respondents perform the RI/FS in accordance with this guidance.

    Part of the streamlined FS process inherent in the guidance is the pre-evaluation of technologies and process options based on effectiveness, implementability, and cost for waste types and waste streams commonly associated with remediation of CERCLA municipal landfills. Section 2.8.2 of the guidance explains the process EPA followed in identifying the most practicable remedial technologies for landfills, and Figure 2-5 and Table 2-3 of the guidance present the results of that process. Note that Table 2-3 associates the technologies with the environmental media being addressed. The comments under the Evaluation heading in Table 2-3 explain the conditions and/or types of contaminants for which the technologies are viable for a given environmental media. Table 2.4 of the Report should be revised to follow the format of Table 2-3 in the guidance, and the comments in the Evaluation column of the table should be made specific to the circumstances at the Site.

When more than one process option for a given technology is identified in Table 2-3 of the guidance, the process options should be evaluated based on site-specific conditions and an explanation provided for selecting one process option over another. For example, passive landfill gas venting can be accomplished using pipe vents, trench vents, or interceptor trenches. Which method is appropriate is dependent on site–specific conditions. When selecting from among the process options, explain the selection in terms of the conditions at the Site and why that selection is most appropriate for those conditions.

Sections 2.3, 2.4, and Table 2.4 should be substantially revised to follow the guidance. There is no need to evaluate the process options for effectiveness, implementability, or cost. EPA has already conducted those evaluations in the guidance itself. Issues with effectiveness, implementability, and cost which may arise when more than one process option is identified for a given technology and environmental media should be addressed in the Evaluation column of Table 2.4 and in the discussion of the results of the site-specific screening presented in Sections 2.3 and 2.4 of the Report.

The following comments on Sections 2.3 and 2.4 of the Report respond to those sections as currently presented. The majority of these comments would be addressed by revising Sections 2.3, 2.4, and Table 2.4 of the Report as discussed above, i.e., to be consistent with and to take advantage of the prescreening conducted in the guidance.

16. Section 2.3 – General Response Actions, p. 63, 1st full paragraph. It is not clear what the phrase "each of these contaminant sources" refers to. Please clarify what the contaminant sources are.

17. Section 2.3 – General Response Actions, p. 63, 2nd paragraph. The No Action general response action provides a baseline against which to compare other alternatives, but not other general response actions. Please revise.

18. Section 2.3 – General Response Actions, p. 63, 3rd paragraph. Institutional controls lessen the likelihood of exposure but cannot isolate potential receptors or eliminate exposure pathways. Please revise accordingly.

19. Section 2.3 – General Response Actions, p. 63, fifth and sixth paragraphs. Physical, chemical, and biological actions are remedial technologies for treatment, not general response actions. The response action collection/treatment needs to be separated into collection, as one response action, and treatment, as another. In terms of scope, the general response

actions should be consistent with the general response actions identified in the guidance, and the technologies and process options mixed in with the general response actions should be separated out and classified as such consistent with the guidance.

20. Section 2.4.2 – Evaluation of Technologies and Selection of Representative Technologies, p. 65, 7th bullet. It is not possible to evaluate decisions based upon CRA's previous experience and engineering judgment in the absence of any supporting documentation. Either provide the documentation or delete these criteria. Note that EPA's previous experience regarding cost of landfill technologies is incorporated and documented throughout the guidance. This obviates the need to rely on CRA's previous experience and professional judgment.

21. Section 2.4.2.1 – Landfill Cap, p. 66, 2nd bullet. Please discuss how capping will remediate the wetlands, including how mitigation will be addressed.

22. Section 2.4.2.1 – Landfill Cap, p. 66, 1st full paragraph, last sentence. A cap designed to accommodate businesses currently present on the Site will require ARAR waivers for the composition of the cap and also need to meet the substantive requirements for a variance for a slope of less than 5%. The substantive requirements for a variance will need to be met for any cap that does not meet slope requirements.

23. Section 2.4.2.1 – Landfill Cap, p. 66, 3rd full paragraph. The text states that the cap(s) will be graded to direct storm water to the edge of the cap(s). Please continue the discussion and describe how storm water will be managed beyond the edge of the cap(s).

24. Section 2.4.2.1 – Landfill Cap, p. 66, 4th full paragraph. Please clarify what types of waste would be disposed of off-site and what waste would be consolidated under the cap.

25. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 66, 5th paragraph, 2nd sentence. It is unknown how much decomposable waste is present in the landfill. Please revise this section to state that the landfill may not generate sufficient LFG to necessitate an active collection system.

26. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 67, 1st paragraph, 2nd sentence. It is unclear how passive venting addresses the contaminant risk from NMOCs. Please delete this sentence.

27. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 67, 2nd paragraph, 1st sentence. Please delete the phrase "if required."

28. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 67, 2nd paragraph. Please provide more detail on the construction of the passive vents, i.e. the length and depth of the perforated pipe, the size of the outer orifice, the expected radius of influence, and why three vents at each location are expected to be sufficient. Are there areas (such as adjacent to the existing businesses) where interceptor trenches might be more appropriate than pipe vents? Why or why not?

29. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 67, 2nd paragraph, 7th sentence. The text states that "where applicable, the vents will be installed ..." Please explain by describing under what circumstance the perforated pipe would not be installed beneath the FML. As suggested in the text, additional vents may be required based on the results of the VI (and methane) study. If vents are needed in the area of the MatCon cap of Alternative 2, how will they be installed so as to not interfere with the businesses and not present risk if the emissions are not treated?

30. Section 2.4.2.2 -- Monitoring and Passive Venting of LFG, p. 68, 2nd paragraph. The objective of the quarterly explosive gas monitoring prescribed in OAC 3745-27-12 is to monitor for explosive gases around a landfill to protect human health and the environment. Additional monitoring may be necessary to evaluate the performance of the LFG collection system and building interior monitoring will be needed due to the businesses located on top of the landfill. Also, the LFG system described in this section does not include any treatment. Please revise this sentence.

31. Section 2.4.2.3 – Monitoring and Passive Venting of Soil Vapor, p. 68, 3rd and 4th full paragraphs. CRA is conducting an interim response action to address potential current explosive gas and soil vapor intrusion risks at on-Site buildings. The interim response measures are temporary measures to address potential current exposures, similar to providing bottled water to an impacted private drinking water well user, and not long-term solutions for the risks associated with

landfill gas or soil vapor. However, one of the remedial action objectives is to "control and, if necessary, treat landfill gas and soil vapor within OU1 that pose an unacceptable or potential future risk to human health and the environment." Therefore, this pathway should be included in the FS and technologies need to be identified and evaluated which provide long-terms solutions to address this RAO.

32. Section 2.4.2.3 – Monitoring and Passive Venting of Soil Vapor, p. 68, 3rd full paragraph. Please add a discussion of how the soil vapor pathway may be affected by capping the landfill around the on-Site structures, i.e. with a continuous, impermeable surface around and sealed to the buildings. Please also discuss the use of active soil vapor systems to address any current threats that might be identified during implementation of the VI work plan.

33. Section 2.4.2.3 – Monitoring and Passive Venting of Soil Vapor, p. 68, 4th full paragraph. If unacceptable risks are identified within on-Site buildings, active systems such as sub-slab depressurization systems would need to be installed, not passive systems. Please revise this sentence, replacing the term "passive" with "active".

34. Section 2.4.2.3 – Monitoring and Passive Venting of Soil Vapor, p. 68, 4th full paragraph. Please revise this sentence, removing the phrase "for the first two years." Monitoring will need to continue until the threat is no longer present.

35. Section 2.4.2.4 – Leachate Monitoring, p. 68, last paragraph. This section only addresses part of the second RAO. Please add to this section to clarify that this section only addresses contaminant leaching to the surface and surface water but does not address leaching to groundwater or groundwater to surface water. Revise this discussion (and elsewhere throughout the FS) to insert the word "surface" in front of leachate each time it is mentioned. Revise statement in the paragraph at the top of page 69 to clarify that following installation of the cap, generation of leachate *due to infiltration of precipitation* is expected to be minimal. Clarify that subsurface leachate controls (if needed) will be addressed in OU-2 and are not part of this study.

36. Section 2.4.2.5 – Valley Asphalt Production Well Monitoring, p. 69, 2nd full paragraph. Please add to this paragraph to clarify what is meant by "verified results" and identify the exposure pathway as the potable use (drinking water) pathway.

37. Section 2.4.2.8 – Engineering Controls, p. 69, 3rd full paragraph. Please add to this paragraph to describe in more detail what would be necessary to accommodate "the active businesses to ensure that they are not unduly affected during construction." This information is needed in order to evaluate short-term effectiveness of this alternative.

38. Section 2.4.2.9 – Institutional Controls, p. 69, last paragraph. Please add to this paragraph to specify which RAOs would be achieved using institutional controls and provide more detail regarding what use restrictions are likely to be needed and how they would be implemented.

39. Section 2.4.2.9 – Institutional Controls, p. 69, last paragraph. Add to this section a discussion of Ohio's environmental covenant law and how it is the mechanism for enforcing institutional controls. Please identify the use restrictions likely to be included in the covenant.

40. Section 2.4.2.9 – Institutional Controls, p. 70, 1st paragraph. Please clarify if the Soil Management Plan is part of the covenant. Is this intended to be the vehicle for complying with ORC 3734.02(H) and OAC 3745-27-13, authorization to disturb land where a hazardous waste facility, or a solid waste facility, was operated? If so, please discuss here and in the ARAR analysis table (see attached General ARAR comments previously provided to EPA for regarding the need for a single, comprehensive ARAR table.)

41. Section 2.4.2.9 – Institutional Controls, p 70, last paragraph: The link between CRA's LFG modeling and the referenced institutional controls is unclear. If there is no risk associated with the landfill gas, why are the institutional controls needed?

42. Section 3.1 -- Development of Alternatives, p.71, 1st sentence. It is the development of alternatives that is streamlined, not the alternatives themselves. Revise accordingly.

43. Section 3.1 -- Development of Alternatives, p. 71, 2nd sentence. Please replace the text here with the actual purpose for including the no action alternative, specifically that the no-action alternative is required as part of the NCP and provides a baseline against which other alternatives can be compared.

44. Section 3.1 -- Development of Alternatives, p. 71, 1st bullet, Alternative 2. Please clarify that the asphalt cap is not just asphalt; it is specialty low-permeability asphalt – MatCon. Plain roadway-type asphalt would not be acceptable. Also, include in the description that this is not an ARAR compliant cap and the composition of the cap would require ARAR waivers from USEPA. The solid waste cap portion of Alternative 2 would be ARAR compliant by meeting the substantive requirements for obtaining a variance for the minimum 3% slope. Please revise accordingly.

45. Section 3.1 -- Development of Alternatives, p. 71, 4th paragraph, Alternative 3. This alternative is described as "the most conservative, Presumptive Remedy approach within the remedial spectrum." This is not accurate. Please delete this text. Alternatives are required to meet ARARs or justify a NCP waiver. This is the ARAR compliant alternative, meaning it is the minimum necessary to meet regulatory requirements.

46. Section 3.1 -- Development of Alternatives, p. 71, last bullet. This bullet discusses LFG venting. As stated above, passive venting is inappropriate for structures at risk from landfill gas. Active systems are likely necessary to protect building occupants if methane is an issue, and active sub-slab depressurization systems may also be necessary to address vapor intrusion.

47. Section 3.1 -- Development of Alternatives, p. 72, 1st bullet. Add to the feasibility study the cost of the contingency plan for the Valley Asphalt wells and provide more detail on the contingencies.

48. Section 3.1 -- Development of Alternatives, p. 72, 2nd and 3rd bullet. Add more detail on the LFG and soil vapor monitoring.

49. Section 3.1 -- Development of Alternatives, p. 72, 7th bullet. Add more detail on the perimeter fencing and other access controls such as signs. USEPA's guidance "*Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites*" specifies that fencing is warranted at landfills where passive venting of landfill gas is being used. In addition, signs would need to be posted on the fence to warn potential trespassers that there may be a health threat associated with going on the Site.

50. Section 3.1 -- Development of Alternatives, p. 72, 2nd paragraph. "Minimizing contaminant leaching to groundwater" is one of the remedial action objectives,

however the "common components" of the remedial alternatives described here do not affect contaminant leaching to groundwater. Addressing hot spots would. To address the fourth remedial action objective, "treat or eliminate high levels of hazardous substances, pollutants, or contaminants (hot spots) to the extent practicable and necessary to protect human health and the environment," hot spots need to be investigated and addressed as a common component of Alternatives 2 and 3.

51. Section 3.1 -- Development of Alternatives, p. 73, cap design figure. The cap design layers in this figure do not agree with the details elsewhere in the report, in Figure 3.1, in Table 3.1, and in Appendix D. The Asphalt cap (which should be identified as the MatCon cap), is described as 4" of MatCon asphalt, however, elsewhere, such as in Table 3.1, it is described as 2" of asphalt and 2" of MatCon. Also, in this figure the soil barrier layer is described as 12" thick, however, elsewhere in the report is it described as 18". Note that a 18" compacted soil barrier layer is required by OAC 3745-27-08 (D)(a)(i). Please resolve the discrepancies and correct this figure.

52. Section 3.2 – Screening of Alternatives, p. 73, 2nd paragraph, 1st sentence. Direct contact (soil?) is suggested to be the primary exposure pathway, however only one RAO addresses direct contact. Please also discuss the other exposure pathways at the Site inherent in the remainder of the RAOs and how they and all of the RAOs (including those that identify routes of contaminant migration as opposed to exposure pathways) will be addressed. Delete "primary" from the discussion of exposure pathways. All exposure pathways inherent in the RAOs need to be addressed, not just direct contact. Note that not all RAOs are effectively addressed by containment (such as potential hot spots) and revise the last part of the first sentence accordingly.

53. Section 3.2 – Screening of Alternatives, p. 73, 2nd paragraph, last sentence. The statements here are made without substantiation. Please delete this sentence.

54. Section 3.2 – Screening of Alternatives, p. 73, last paragraph, 1st sentence. Please add to this sentence that the HELP model evaluates the performance of the containment options <u>with respect to preventing vertical infiltration</u>.

55. Section 3.2 – Screening of Alternatives, p.74, last sentence before section 3.2.1. The only alternative that could be screened from further consideration is

Alternative 2 due to the non-ARAR compliant cap. Alternative 3 is not subject to screening based on the HELP model and is only evaluated using the HELP model to provide a basis for comparison of the results of the HELP model as applied to Alternative 2 in support of requesting a NCP equivalency waiver with respect to prevention of vertical infiltration.

56. Section 3.2.2 – Remedial Alternative 2, p. 74, 3rd full paragraph. Add to this paragraph a statement that the MatCon cap will require NCP ARAR waivers and that the HELP model will assist with an equivalency determination only with respect to vertical infiltration.

57. Section 3.2.2 – Remedial Alternative 2, p. 74, last paragraph. This paragraph should be replaced with the reason this alternative relies on a solid waste cap in the areas outside of the current businesses – compliance with applicable ARARs. The results of the HELP model as applied to the ARAR compliant cap are used as a basis for comparison of the performance of the MatCon cap with respect to vertical infiltration. If the MatCon cap was not being considered, there would be no need to run the HELP model on the ARAR compliant SW cap. The ARAR compliant SW cap does not survive screening because of the HELP model, it survives because it complies with ARARs.

58. Section 3.2.2 – Remedial Alternative 2, p. 74, footnote 23. The conclusion that the two caps are functionally equivalent needs to be qualified. The HELP model only evaluates vertical infiltration. Justification for the other ARAR waivers needed to implement Alternative 2's MatCon cap still need to be provided.

59. Section 3.2.2 – Remedial Alternative 2, p. 75, 1st paragraph and 3rd paragraph, and Section 3.2.3 – Remedial Alternative 3, p. 76, 4th paragraph. Inspection and monitoring programs are important components of remedies where waste is left in place. Monitoring programs are essential to demonstrate that containment remedies are capable of achieving and maintaining protection over time. Therefore, please provide more details on these programs and which remedial components and exposure pathways they will monitor. Also, include the inspection and monitoring program activities in the alternatives cost estimates.

60. Section 3.2.2 – Remedial Alternative 2, p. 75, 2nd paragraph. MatCon's literature indicates a minimum grade of 1.5%. Please change the text to a minimum 1.5% grade for the MatCon cap. Also, Ohio EPA understands that the solid waste cap component of the alternative has been revised and will be

constructed with a minimum 3% grade. Please revise the text to reflect this change. In addition, please add a discussion of how the storm water will be managed once it leaves the edge of the cap. This needs to be discussed for the MatCon cap area as well.

61. Section 3.2.2 – Remedial Alternative 2, p. 75, ARAR Variance/Waiver Approvals. Revise this section to separate out the discussion of waivers and the discussion of variances. Clarify that the MatCon cap component of Alternative 2 does not comply with ARARs and hence will require NCP waivers for the non-compliant components (such as the drainage layer and other deviations) in order to be eligible for selection. In the discussion of variances, clarify that meeting the substantive requirements for obtaining a variance under Ohio's solid waste rules complies with ARARs and no NCP waivers are required. The solid waste cap component of Alternatives 2 and 3 will comply with ARARs by meeting the substantive requirements for obtaining a variance under Ohio's solid waste rules.

62. Section 3.2.2 – Remedial Alternative 2, p. 75, fifth paragraph, and Section 3.2.3 – Remedial Alternative 3, p. 76, last paragraph. Both the SW cap (minimum 3% slope) and the MatCon cap (minimum 1.5% slope) will require a variance from the 5% grade requirement contained in OAC 3745-27-08. Add the following text to the report, in both sections, and remove the OAC 3745-27-08(C)(4)(c) from Table 3.2:

"The substantive requirements for a variance from Ohio's solid waste rules to allow an alternate grade for the cap would need to be addressed as follows:

Citation	*Description*	*Proposed Variance*
OAC 3745-27-08(C)(4)(c)	*Cap shall have at least* *a. 5 percent grade in all* *b. areas except where* *c. surface water control* *d. structures are located*	*The SW cap would have a grade of approximately 3 percent minimum instead of 5 percent*

"The substantive requirements of OAC 3745-27-03 "Exemptions and Variances" paragraph (C) "Variances" would need to be met. The OAC identifies that variances to most of the Ohio Solid Waste and Infectious Waste Regulations may be granted if the variance will not create a nuisance or hazard to public health or safety or the environment and is unlikely to result in a violation of any other requirements of chapters 3704, 3734, and 6111. OAC 3745-27-03(C)(2) states that "Applications for variances shall identify the provision(s) of the regulations for which the variance is

requested and shall contain information regarding the reason and justification for the variance, and any other pertinent data regarding the application as the director may require for the demonstration...". As stated in OAC 3745-27-11 "Final Closure of a Sanitary Landfill Facility" paragraph (H)(2) "Other Closure Activities":

"The owner or operator shall install the required surface water control structures including permanent ditches to control run-on and runoff and sedimentation pond(s), as shown in the final closure/post-closure plan, and as necessary, grade all land surfaces to prevent ponding of water where solid waste has been placed and institute measures to control erosion.

"As indicated above, the performance standard for the cap is to prevent ponding of water where solid waste has been placed. The old age of the waste at this site is such that any future settlement would be minimal. Substantive requirements identified by Ohio EPA for varying from the 5 percent grade contained in OAC 2745-27-08(C)(4)(c) include: 1) performance of a stability analysis as part of RD to establish whether an alternate grade of not less than 3 percent could be implemented, and 2) acceptance of the final cap design by Ohio EPA's Division of Solid and Infectious Waste Management.

"Such a stability analysis would be performed in accordance with Ohio EPA's "Geotechnical and Stability Analyses for Ohio Waste Containment Facilities" (September 14, 2004) to demonstrate that the cap could be designed and constructed such that positive drainage is achieved and maintained. Design and construction of the cap would include surface water control structures including permanent ditches to control run-on and run-off, sedimentation pond(s), erosion control measures, and grading of all land surfaces to achieve positive drainage and prevent ponding of water where solid waste has been placed. Any significant settlement that may result in ponding of water would be managed through corrective action to be included in the O&M plan."

63. Section 3.2.2 – Remedial Alternative 2, p. 75, 5th paragraph and Table 3.2. Table 3.2 is mislabeled as Summary of Required ARAR Variances. Most of the cap design components listed in the table will require ARAR waivers, not variances. As discussed above the only variance contemplated would be for cap grade. According to Table 3.2 the MatCon cap would require four NCP waivers of the requirements of OAC 3745-27-08, Sanitary Landfill Construction, for the following cap requirements: "18 inch recompacted soil barrier layer, flexible

membrane liner, 12" drainage layer, and 30" cap protection layer. Please revise the text and Table 3.2 accordingly.

The NCP identifies six circumstances under which an alternative that does not meet an ARAR may be selected. Of these six circumstances, only Circumstance #4 (The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach) is relevant.

Revise Table 3.2 as a Summary of Required ARAR Waivers. In the Justification column, replace the current text with technical explanations. For example, Ohio EPA relies on U.S. EPA's Hydrologic Evaluation of Landfill Performance (HELP) model to evaluate the performance of alternate cap designs with respect to vertical infiltration. Provide additional justification, including technical and/or engineering justification, for obtaining an equivalency waiver for all components of the capping system which do not comply with ARARs. Remove the inappropriate generalizations regarding the classifications of the waste material.

64. Section 3.2.3 – Remedial Alternative 3, p.76, 2nd paragraph. First, the current businesses would not need to cease operations permanently; they would need to relocate. Please revise the text. Also, here CRA has stated that "any significant future commercial use of the Site will be prohibited." Why? Since this alternative is the same as Alternative 2 with respect to the risks inherent in passive LFG venting, add the above statement regarding prohibition of future commercial use to Section 3.2.2 (the description of Alternative 2) for the area in which the passive vents are located.

65. Section 3.2.3 – Remedial Alternative 3, p. 76, 3rd paragraph. Delete this paragraph. A "conservative approach" has nothing to do with why this alternative is retained, nor does the HELP model results. It is retained because alternatives must either comply with ARARs or justify a NCP waiver.

66. Section 3.2.3 – Remedial Alternative 3, p. 76, 4th paragraph. As discussed previously, more detail needs to be provided regarding post-closure care requirements, storm water management, and monitoring.

67. Section 3.2.3 – Remedial Alternative 3, p. 76, ARAR variance approvals. Revise to indicate that the substantive requirements for a variance will need to be met to use a slope of less than 5%.

68. Section 4.0 – Detailed Analysis of Remedial Alternatives, pp. 77 & 78. Please replace the nine criteria definitions with the definitions in the NCP (found in 55 FR 8849 and 55 FR 8850).

Individual Analyses of Alternatives

69. Section 4.2 – Individual Analysis of Alternatives, p. 79, 1st paragraph. This paragraph appears to be from another report. Section 3 does not include detailed descriptions of the alternatives; also there are three individual alternatives, not eight. Please revise the text.

70. Section 4.2 – Individual Analysis of Alternatives, pp. 79 – 87, Sections 4.2.1, 4.2.2, and 4.2.3. Provide at least a bulleted description of each alternative's components.

71. Section 4.2.1 – Remedial Action Alternative 1 – No Action, p. 79, 2nd paragraph. Correct the risk assessment reference. Replace "BRA" with "streamlined risk assessment."

72. Section 4.2.1 – Remedial Action Alternative 1 – No Action, p. 79, 3rd paragraph. Identify the ARARs that will not be met.

73. Section 4.2.1 – Remedial Action Alternative 1 – No Action, p. 79, 4th paragraph. Please add to this discussion, pointing out that RAOs will not be met and identifying the risks that remain.

74. Section 4.2.1 – Remedial Action Alternative 1 – No Action, p. 79, 5th paragraph. Delete the last phrase of this sentence. The continued decomposition of the waste mass is not treatment.

Sections 4.2.2 and 4.2.3, <u>Overall Protection of Human Health and the Environment</u>, p. 80 and p. 84.

75. Please expand the assessments of the "overall protection of human health and the environment" criterion to describe how each RAO is met and how each of the potential threats and exposure pathways (not just direct contact) is addressed. Note that overall protection also requires an evaluation of a composite of factors assessed under other evaluation criteria, especially long-term effectiveness and

permanence, short-term effectiveness, and compliance with ARARs, and include evaluation of these factors in this assessment.

Sections 4.2.2 and 4.2.3, <u>Compliance with ARARs,</u> p. 80 & 81 and p. 84 & 85:

76. a) Separate the discussion of NCP waivers and variances under Ohio's solid waste rules. Clarify exactly what NCP waivers would be needed and what specific rules would be waived. Provide a justification for each NCP waiver sought. Clarify what variance would be needed and what specific rules would be varied from. Identify the substantive requirements that would need to be met to obtain the variance. See Comment 61.

77. b) Delete reference to OAC 3745-29, OAC 3745-30, and OAC 3745-400 throughout the FS. They are not ARARs for this Site.

78. c) Clarify that a minimum 3% slope is being considered for the undeveloped central portion of the Site in Alternative 2 and for Alternative 3. Add to the text, as discussed in Comment 62, that a variance for reduced slope will be based upon: 1) performance of a stability analysis as part of RD to establish whether an alternate grade of not less than 3 percent could be implemented, and 2) acceptance of the final cap design by Ohio EPA's Division of Solid and Infectious Waste Management.

79. d) As mentioned in above comments, storm water management, post-closure care, and institutional controls are important components of the remedial alternatives, too important to defer to the RAP. Add to Sections 4.2.2 and 4.2.3 information about these components sufficient to demonstrate compliance with applicable ARARs.

80. e) In these sections and throughout the report, clarify that the leachate addressed by OU1 is limited to surface leachate. Replace "leachate" with "surface leachate" throughout the Report.

81. f) In Section 4.2.3, the text states that Alternative 3 will address ARARs relating to LFG through passive venting. Alternative 2 also includes passive venting of LFG. For both alternatives, in the text, expand the section to list the LFG ARARs and air emission ARARs and discuss how they will be met.

82. g) The USEPA Superfund Green Remediation Strategy and the Principles for Greener Cleanups are misapplied throughout this report. Green remediation does not address site reuse. Green remediation is defined by USEPA in the Superfund Green Remediation Strategy as "considering all environmental effects of remedy implementation and incorporating options to minimize the

environmental footprints of a cleanup." Example green remediation strategies are best management practices for excavation and surface restoration, pump and treat technologies, bioremediation, soil vapor extraction & air sparging, clean fuel & emission technologies for site cleanup, and integrating renewable energy into site cleanup. The last two, clean fuel and integrating renewable energy into site cleanup, may be the most applicable to Alternatives 2 and 3, as would methane combustion at the passive vents to reduce greenhouse gas emissions. Please replace the first paragraph on page 85 with discussions in Sections 4.2.2 and 4.2.3 of how these green remediation strategies can be incorporated into the alternatives.

83. h) Section 4.2.2, p. 80, last paragraph, Compliance with ARARs. Under Alternative 2, the reduced slope under consideration for the MatCon cap is minimally 1.5%, not 1%. Also, the fourth sentence is inaccurate and needs to be revised or deleted. Ohio EPA has not approved MatCon or an asphalt cap at a similar site. Provide documentation of where USEPA has approved MatCon at a similar site, i.e. to close a CERCLA municipal waste landfill site.

84. i) Section 4.2.2, p. 81, last paragraph. This paragraph is not relevant to ARARs. Please delete.

Sections 4.2.2 & 4.2.3, <u>Long-term Effectiveness and Permanence</u>, p. 82 & p. 85.

85. a) This criterion involves a discussion of the adequacy and reliability of the components of the alternative, including LFG, soil vapor, and surface water controls, monitoring, institutional controls, fences, etc. Long-term effectiveness also includes the ability of the cap(s) to maintain its integrity. Please add these considerations to the discussion in this section for both alternatives.

86. b) It is stated in the text that both Alternative 2 and Alternative 3 will have a high degree of permanence. However, irreversible treatment is needed for a high level of permanence. As presented in the Report, both alternatives rely on containment and currently do not include any treatment components. Unacceptable exposures can occur if containment remedies fail, and hence they do not rate well when considering permanence. Please revise the text.

87. c) According to the NCP, assessment of this criterion also includes consideration of the "magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities." Given that no treatment is included in any of the alternatives, the residual risk of the untreated waste would not change for either of the alternatives.

88. d) Section 4.2.2, p. 82, 1st paragraph, last sentence. The text states that the closure requirements "conservatively address relevant exposure pathways." No basis is presented for this judgment. Please delete this text. This is the ARAR compliant alternative, and is the minimum protection required by ARARs.

89. e) Section 4.2.3, p. 85, 2nd paragraph, last sentence. The text states that the cap design would eliminate relevant exposure pathways. Provide more specific detail on the exposure pathways controlled (not eliminated) by the cap.

90. f) Section 4.2.2, p. 82, 2nd paragraph. Add to this section mention that the MatCon cap has a limited life-span and will require replacement.

Sections 4.2.2 & 4.2.3, Reduction of Toxicity, Mobility, or Volume through Treatment, p. 82 & p. 85.

91. As presented, neither alternative includes any treatment. Revise the text in both sections to acknowledge that no treatment is included and hence nether alternative reduces the toxicity, mobility, or volume of the hazardous substances using treatment.

Sections 4.2.2 & 4.2.3, Short-term Effectiveness, p. 82 & 83 and p. 85 & 86.

92. a) For both alternatives, a reduction in erosion control during construction is identified as a potential environmental impact of the remedial actions. Please add to the text in both sections, a discussion of the effectiveness and reliability of mitigative measures, such as those required by the solid waste management and storm water management ARARs.

93. b) For both alternatives, an increase in infiltration is identified as a potential environmental impact of the remedial actions because of the removal of soil cover and it is suggested that it will be minimized following the establishment of the vegetation on the cap. These are not evapotranspiration caps. Infiltration will primarily be controlled by the barrier layers once construction is completed. Please revise the text in both sections.

94. c) The text states, under Alternative 3 that the Small and Large Ponds will be destroyed, however, this is not mentioned in Alternative 2 which will have the same remedial action over the same area. Please revise the text in Alternative 2.

95. d) In both sections, separate the discussions of short-term risks to environment and short-term risks to the community. Discuss the measures that will be taken to mitigate short-term risks in both sections.

96. e) In both sections, risks are associated with emissions from haul trucks and construction equipment and the statement is made that "these risks cannot be readily mitigated." These risks can be readily mitigated using green remediation best management practices for clean fuel & emission technologies. As also stated in other comments, these green remediation technologies should be incorporated into the alternatives.

97. f) In both sections, discuss the short-term risks to the workers and patrons of the on-Site businesses during construction. Discuss what monitoring and mitigative measures will be necessary to protect on-Site business workers and patrons. For example, discuss how the areas surrounding the businesses can be safely excavated in order to install the MatCon cap at the approximate existing grade. If the businesses will need to close temporarily during construction of some components of the alternatives, please identify which components and the expected duration of the closure(s).

98. g) In both sections, the time until protection is achieved and the time until RAOs are met is not discussed. Please provide a timeframe for both achieving protection and meeting RAOs.

99. h) Economic considerations are not part of short-term effectiveness. Please remove the last sentence of page 85 about the relocation of the on-Site businesses from the Alternative 3 discussion.

Section 4.2.2 and Section 4.2.3, <u>Implementability</u>, p. 83 & p. 86.

100. a) To both sections, add a discussion of administrative implementability.

101. b) On page 83, for Alternative 2, the text states that "the constructed features of this alternative are common to many remediation projects." The use of MatCon specialty asphalt to cap part of a landfill is not common. Please revise accordingly.

102. c) To the Alternative 2 discussion on page 83, add the technical difficulty of constructing the MatCon cap around and sealing the cap to the existing businesses. Discuss also the difficulties involved with constructing the caps with on-Site business workers and patrons in close proximity to construction activities. Discuss if the businesses will need to temporarily close at any point, and if so, for how long.

103. d) Alternative 3, page 86, 3rd paragraph, 1st and 2nd sentences. The requirements for Alternative 3 are not political or economic. Revise the first sentence to read: "This alternative includes a cap over the entire OU-1

presumptive remedy area which complies with OAC 3745-27." Delete "Therefore" from the beginning of the second sentence.

104. e) In both sections the statement is made that "the effectiveness of the features associated with this alternative is easily monitored." Please provide the details of the features and how they will be monitored.

105. f) For Alternative 2, MatCon is specialty asphalt produced by one manufacturer. In this section, discuss the availability of this product for a project of this size in this area of the country. Discuss other technical challenges for the product, for example any weather or seasonal restrictions for installation and the technical issues associated with installing the MatCon in close proximity to the buildings and sealing it to the buildings.

Section 4.2.2 and Section 4.2.3, Cost, p. 83 and p. 86 & 87.

106. a) Site clearing is listed as a cost for both alternatives and the same area is cleared with the exception of where business structures are located that will be retained. Delete the word "substantial" from the wording for Alternative 3, on page 86, last paragraph, in the fourth sentence.

107. b) On page 86, last paragraph, in the fifth sentence, the text states, under Alternative 3 that the Small and Large Ponds will need to be backfilled to grade, however, this is not mentioned in Alternative 2, which will have the same remedial action over the same area. Please revise the text in Alternative 2.

108. c) Earlier in the alternative analysis it is stated that wetland mitigation will be necessary for both alternatives. Add the cost of wetland mitigation to the costs of the remedial alternatives.

109. d) The costs should be adjusted for both Alternative 2 and 3 using a 3% slope for the solid waste caps and a 1.5% slope for the MatCon cap.

110. e) For both alternatives, add the costs of maintaining fence and signage that will be necessary to control access due to the passive LFG vents.

111. f) P. 87, 2nd full paragraph, 2nd sentence. The costs for the "permanent loss" of any future use of the Site are not relevant to this criterion. Delete this sentence.

Comparative Analysis of Alternatives

112. Section 4.3 -- Comparative Analysis, p. 87. The above comments on the individual analyses of the alternatives also apply to the comparative analysis.

Once the comments on the individual analyses are incorporated, the comparative analysis needs to be redone based on the revised individual analyses. The current comparative analysis, like the current individual analyses, is overly simplistic and does not allow the alternatives to be compared using the remedy evaluation criteria in the NCP. Additional comments on the comparative analysis as currently presented follow.

113. Section 4.3 -- Comparative Analysis, p. 87, 3rd full paragraph, 1st sentence. The intention of the presumptive remedy of containment for the low level threat waste such as municipal waste at landfills includes addressing risks other than just direct contact. Other exposure pathways the OU1 remedy must address include exposure to contaminated surface leachate, exposure to landfill gas, on-Site exposure via vapor intrusion, potable water exposure (at Valley Asphalt), and any other potential exposure pathways associated with the OU-1 RAOs. Note also that the presumptive remedy is not containment for potential hot spots areas and that there is an RAO for addressing potential hot spots. Revise this paragraph accordingly. (Ohio EPA understands that the December 2010 dispute resolution resulted in the fourth general pathway addressed by the presumptive remedy, exposure to contaminated ground water, is to be deferred to OU2 with the exception of the Valley Asphalt potable water wells.)

114. Section 4.3 -- Comparative Analysis, p. 87, 3rd full paragraph, 2nd sentence. The text lists the type of cap as the largest difference between the alternatives. Please add more detail on the other differences between the alternatives such as the complexities involved with implementing a remedy that allows existing businesses on top of the landfill to remain in place.

115. Section 4.3.1 – Overall Protection of Human Health and the Environment, p. 87, 4th full paragraph. The second sentence states that direct contact exposure is the relevant exposure pathway. As discussed above, there are other relevant exposure pathways for OU1 based on the OU-1 RAOs. Please expand the comparative analysis of "overall protection of human health and the environment" to describe how each of the RAOs are met how the alternatives address each of the potential threats and exposure pathways (not just direct contact). Note that overall protection also requires an evaluation of a composite of factors assessed under other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs, and include a comparative analysis of these factors in this assessment. See also comments on overall protection provided for the individual analyses.

116. Section 4.3.1 – Overall Protection of Human Health and the Environment, p. 87, Protection of Human Health and the Environment table. Revise this summary table to incorporate the revised analysis.

117. Section 4.3.1 – Overall Protection of Human Health and the Environment, p. 88, 1st paragraph. Please provide detail to substantiate the conclusion that Alternatives 2 and 3 would not "pose any unacceptable short-term or cross-media impacts." For example, discuss the short-term risks of constructing Alternative 2 around operating business, and the cross-media impacts of venting untreated landfill gas (a greenhouse gas) and soil vapors from passive vents, including the need to restrict access with fences and signage due to passive venting. Explain how this can be accomplished (necessary mitigation measures) while maintaining the businesses in the MatCon cap portion of Alternative 2.

118. Section 4.3.2 – Compliance with ARARs, p. 88, 2nd paragraph, 1st sentence. Please delete. Alternatives are required to comply with the substantive requirements of ARARs for actions conducted entirely on-Site, and all requirements (including permitting) for activities or discharges or treatment which occurs off-Site. NCP waivers must be justified when ARARs are not complied with.

119. Section 4.3.2 – Compliance with ARARs, p.88, Compliance with ARARs table. Delete variances and slope from the "moderate" category. Meeting the substantive requirements of obtaining a variance under Ohio's solid waste rules complies with ARARs. Alternative 2 rates "Moderate" as it requires NCP waivers and Alternative 3 rates "High" as it complies with ARARs.

120. Section 4.3.2 – Compliance with ARARs, p. 88, 3rd paragraph. Correct the first sentence. NCP ARAR <u>waivers</u> can be justified under the circumstances identified in the NCP, not <u>variances under Ohio's solid waste laws</u>.

121. Section 4.3.2 – Compliance with ARARs, p. 89, 1st full paragraph. Please delete this paragraph discussing the direct contact exposure pathway. The NCP waivers needed for the Matcon cap must be based on a demonstration of meeting an equivalent (or better) standard of performance than that required by the specific ARAR being waived.

122. Section 4.3.2 – Compliance with ARARs, p. 89, 2nd full paragraph. Delete this paragraph. Variances under Ohio's solid waste rules are part of the rules, not an inconsistent application of them. Also, it cannot be demonstrated that Ohio has inconsistently applied the ARARs applicable to this Site. No

"inconsistent application" ARAR waivers are being sought for this Site and none can be justified.

123. Section 4.3.2 – Compliance with ARARs, p. 89, 3rd paragraph. Again, separate the issues of non-compliance with ARARs requiring NCP waivers from the discussion of ARAR compliant variances under Ohio's solid waste regulations. Also, there has been no evaluation of major and minor ARARs, so delete the reference to "minor" variances or waivers.

124. Section 4.3.2 – Compliance with ARARs, p. 89, 4th paragraph. Again, separate the issues of ARAR waivers and rule variances. NCP waivers for the MatCon cap will not be "justified in order to preserve the active businesses present on Site." The waivers can only be justified by a demonstration of equivalent performance with respect to the ARAR being waived. Also note that preserving the businesses currently located on top of the landfill is not a justification for a waiver or variance. The desire to preserve the existing businesses maybe the impetus for seeking a NCP waiver or variance under Ohio's solid waste rules, but it is not a justification for the waiver or variance sought. Revise this paragraph to address these issues.

125. Section 4.3.2 – Compliance with ARARs, p. 89, last paragraph. Please delete this paragraph and instead discuss how the alternatives will incorporate green remediation strategies such as clean diesel technology and management of greenhouse gases. See above comments on the individual analyses for this criterion.

126. Section 4.3.3 – Long-term Effectiveness and Permanence, p. 90, 1st paragraph of section. The statement is made in the first paragraph that "the most important risk associated with the contaminants at the Site is due to direct contact with the waste and fill," and in the next paragraph it is stated that "direct contact is the primary determining factor for long-term effectiveness." This is incorrect. Revise the comparative analysis to compare and contrast the considerations identified for this criterion in the NCP and in the comments above on the individual analyses, including an evaluation of the "magnitude of residual risk" associated with the untreated waste. Revise the summary table to reflect the revised text.

127. Section 4.3.3 – Long-term Effectiveness and Permanence, p. 90, last paragraph. No technical or programmatic justification is presented for the 90 – 99% criteria for a Moderate rating and less than 90% for a Low. Please delete these criteria from this discussion. One metric that could be used to compare the

alternatives that has been used at other sites is the number of gallons of leachate generated each year due to infiltration through the cap for each alternative. In the summary table on page 91, replace the "percentage of precipitation shed" with the gallons of leachate generated each year due to infiltration through the cap.

128. Section 4.3.3 – Long-term Effectiveness and Permanence, p. 91, summary table. "Adequacy and reliability of controls such as containment systems and institutional controls" is another factor that should be considered in evaluating long-term effectiveness. Revise the summary table to more comprehensively evaluate how the alternatives compare on this standard. Note that the ARAR compliant solid waste cap is a dual barrier system and the MatCon cap employs a single barrier system. Note that the ARAR compliant solid waste cap has a "self-healing" layer (the 18" of compacted clay) and the MatCon cap does not. The integrity of the MatCon cap is more sensitive to any future waste settlement than the soil waste cap as it does not contain a self-healing barrier layer and because at a 1.5% slope, there is very little leeway for settlement with respect to maintaining positive drainage and avoiding ponding of precipitation on the landfill. Note also with respect to the direct contact issue, the solid waste cap provides approximately four feet of cap thickness between the waste and the opportunity for direct contact with the waste, and the Matcon cap provides approximately one foot of cap thickness. Any deeper penetration of the Matcon cap can potentially lead to direct contact with the waste. Explain that for these reasons and others (life-span, etc.) the MatCon cap will require more monitoring and more frequent repairs than the ARAR compliant solid waste cap. Note that the conclusion that the two alternatives provide comparable long-term effectiveness and permanence can only be made by assuming a rigorous inspection and maintenance program for the MatCon component of the Alternative 2 cap.

129. Section 4.3.3 – Long-term Effectiveness and Permanence, p. 91, 1st full paragraph. The text states that "both Alternative 2 and Alternative 3 would employ similar institutional controls, engineering controls, and monitoring program." This is inaccurate since Alternative 2 includes the MatCon cap and the on-Site businesses. Both of these components will lead to different and likely more extensive maintenance, monitoring, and replacement requirements than the solid waste cap. The institutional controls will also vary, minimally in their scope. Revise to discuss these aspects. Revise the last sentence to read: "With respect to addressing impacts to shallow groundwater due to infiltration, soil gas, and LFG, all active remedial alternatives are comparable with respect to

the long-term effectiveness." The alternatives do not currently include any irreversible treatment and so the level of long-term protection is not "high" as exposure to the residual risk associated with the untreated waste can occur if the containment remedies fail.

130. Section 4.3.4 – Reduction of Toxicity, Mobility, or Volume through Treatment, p. 91. The alternatives as currently presented do not include any treatment; therefore there is no reduction of toxicity, mobility, or volume of the hazardous substances present at the Site through treatment. See above comments on the individual analyses for this criterion. Further, passive venting is not treatment and it does not reduce the volume of LFG through treatment. It simply transfers the LFG from the subsurface environment to the atmosphere, and hence is in reality inter-media transfer of untreated Site-related contamination. Delete the second half of the first paragraph and the second paragraph of this section. Revise the rest of the text in this section to state that none of the alternatives involve treatment of any hazardous substances and hence there is no reduction of toxicity, mobility, or volume of hazardous substances at the Site due to treatment. In the summary table, all alternatives should be rated as "None."

131. Section 4.3.5 – Short-term Effectiveness, p. 92. The criterion of short-term effectiveness is more than the duration of time within which the alternative can be completed; it is the time to achieve protection and the time to meet RAOs, among other things. See above comments on the individual analyses for this criterion and incorporate into the comparative analysis.

132. Section 4.3.5 – Short-term Effectiveness, pp. 92 and 93. See Comment 99. Remove all discussions, in the text and in the table, about economic impact of the businesses having to relocate from the Site to implement Alternative 3. If anything, Alternative 2, which leaves the businesses in place during remediation, rates lower under short-term effectiveness due to the immediate proximity of human receptors during construction (business employees and patrons) and the resultant additional monitoring and safeguards required to mitigate risks during construction.

133. Section 4.3.5 – Short-term Effectiveness, p. 92 and 93. The discussion of the short-term risks for Alternative 2 in this section did not include the risks associated with constructing the MatCon cap around operating businesses, including the need to excavate waste to maintain grade for the Matcon cap. These risks should be added to the discussion and to the summary table evaluation.

134. Section 4.3.6 Implementability, p. 93, 3rd full paragraph, 1st sentence. Implementability does not include the political and economic impacts on the businesses. See above comments on the individual analyses regarding this criterion. Delete the second half of the first sentence of this paragraph and replace it with the administrative feasibility of obtaining necessary approvals, including permits for any off-site actions.

135. Section 4.3.6 Implementability, p. 93, 3rd full paragraph, 2nd sentence. This sentence mentions some minor expected technical challenges. Describe the technical challenges for each alternative and discuss them in terms of implementability.

136. Section 4.3.6 Implementability, p. 93, last paragraph, and p. 94, 3rd paragraph. The process of relocating businesses, while it will take time, may have a Moderate effect on administrative Implementability, but it is not unimplementable, and should not be rated Low. Alternative 3, a solid waste cap over the entire OU-1 waste area, would rate High for technical feasibility since it uses proven conventional technologies with locally available materials. Also, using the rationale in this paragraph, Alternative 2 should be rated as Moderate because of the technical challenges of constructing the MatCon cap around operating businesses, sealing the cap to buildings and sealing the two caps together, the availability of the materials, and possible weather restrictions. See Comments 97 and 100. In addition, the process of obtaining the waiver for the alternative cap will affect the administrative implementability of Alternative 2.

137. Section 4.3.7 – Cost, p. 94. Remove from this section all discussion of cost-effectiveness. Cost-effectiveness is not part of the cost criteria in the detailed analysis of remedial alternatives in a feasibility study. It will be considered by USEPA during remedy selection. Delete the references to 40 CFR Sec. 300.430(f)(ii)(D) and refer to 40 CFR Sec. 300.430(e)(9)(iii)(G). In this section, the alternatives should be evaluated by comparing the overall costs of the remedial alternatives.

138. Section 4.3.7 – Cost, p. 94. The costs for the remedial alternatives should be revised in response to Comments 106 through 111. The cost part of the comparative analysis should be completed once the cost tables are revised.

139. Section 5.0 -- Summary, pp. 96 through 98. This section will require revision to incorporate the revised individual and comparative analyses of alternatives. The following comments are offered on the Summary as provided in the Report.

140. Section 5.0, Summary, p.96, first sentence. In this sentence, specify that not all components of the presumptive remedy for CERCLA Municipal Landfill Sites are being implemented as part of OU1. The presumptive remedy will not be completed until the components of source area ground-water control and leachate collection and treatment are addressed in OU2.

141. Section 5.0 -- Summary, p. 96, 2nd sentence. Again, clarify that this is the landfill cap portion of the presumptive remedy, not the whole source containment presumptive remedy.

142. Section 5.0 -- Summary, p. 96, 1st bullet. Add the other risks/pathways addressed in the OU-1 RAOs such as LFG, soil vapors, and surface leachate, and how all of the RAOs are addressed by the Alternatives.

143. Section 5.0 -- Summary, p. 96, 4th bullet. Please delete this bullet. The presumptive remedy guidance streamlines the RI/FS process, not the remedy itself.

144. Section 5.0 -- Summary, p. 96, Alternative 1. See Comment 42 regarding the description of Alternative 1.

145. Section 5.0 – Summary, p. 96, last bullet. Delete. See comments on green remediation provided above.

Specific comments on ARARs for Tables 2.1, 2.2, and 2.3, and the table in Appendix E

146. ARAR Tables. Most importantly, reiterating General ARAR Comment #1, for each ARAR, list for each remedial alternative, the affected remedial component and how will the component meet or not meet which specific rule or criteria of the ARAR or TBC.

147. ARAR Tables. The following state rules and regulations that are listed as "relevant and appropriate" are applicable. Please change the designation of these ARARs within the revised comprehensive ARAR table as requested in General ARAR Comment #1

OAC 3745-15
OAC 3745-17
OAC 3745-21
OAC 3745-39
OAC 3745-50

OAC 3745-51
OAC 3745-52
OAC 3745-53
OAC 3745-270
ORC 3734.02(H)
ORC 3734.041
ORC 3767.13
ORC 6111
OAC 3745-1

148. ARAR Tables. Please remove from the list of ARARs the following state regulations as they do not pertain to the South Dayton Dump and Landfill:

ORC 3714.13
OAC 3745-29
OAC 3745-30
OAC 3745-400

149. ARAR Tables. The following guidances which are listed as relevant and appropriate should be listed as "to be considered."

A Guide to Principal Threat and Low Level Threat Wastes (OSWER Directive 9380.3-06S)
USEPA – Reference Doses
USEPA – Cancer Slope Factors
USEPA – Region 9 Preliminary Remediation Goals
Guidance on Remedial Action for Superfund Sites with PCB Contamination (OSWER Directive 9355.4-01, EPA 540/G-90/007, August 1990)

150. ARAR Tables. The descriptions of remedial actions at the Site are inconsistent with the Appendix E table. Under Chemical-Specific ARARs, 40 CFR Part 261 (which is equivalent to OAC 3745-51), it is stated that "any hazardous materials generated during intrusive work will be disposed off-Site." Then under, 40 CFR Part 262 (which is equivalent to OAC 3745-52) and 40 CFR Part 268 (which is equivalent to OAC 3745-270), it is stated that any hazardous materials generated during intrusive work will be disposed off-Site, or treated and disposed on-Site. Similar contradictory language appears later in the table under the discussion of state hazardous waste regulations. Please revisit the anticipated site actions and revise the table text to be consistent with the planned actions.

151. ARAR Tables. The analyses for the federal RCRA regulations and the state hazardous waste rules repeatedly include the term "hazardous materials." These rules apply to hazardous waste, so replace the term "hazardous materials" with the term "hazardous waste."

152. ARAR Tables. The ARAR analyses for the state hazardous waste regulations states that the remediation alternatives do not require generation of hazardous waste. However, excavation of material which will be necessary to install the caps may very well generate hazardous waste. Any waste generated must be evaluated according to the regulations to determine if it is hazardous waste.

153. ARAR Tables, 40 CFR Part 403 (OAC 3745-36). Please describe what part of the remedial alternative would include a discharge of wastewater to a POTW or delete this ARAR from the table.

154. ARAR Tables, USEPA Reference Doses, Cancer Slope Factors, and Region 9 Preliminary Remediation Goals. The soil gas pathway (vapor intrusion) will not be addressed "by eliminating direct contact exposure pathway through capping." Please revise or delete this statement.

155. ARAR Tables, A Guide to Principal Threat and Low Level Threat Wastes. Please remove the statement "There is not substantial quantities of principal threat waste that will require direct treatment." This statement is not supported by the amount of available site data. As has been discussed in comments from USEPA on the OU1 report, there are potential hot spot areas that need further investigation. The result of that investigation may be the relocation, removal, or in-situ remediation of waste.

156. ARAR Tables, OAC 3745-17 These regulations, listed under Chemical-Specific ARARs, are applicable to the remedial actions under evaluation, and several sections of these regulations, OAC 3745-17-02 and 3745-17-05, are listed under Action-Specific ARARS. In addition, sections OAC 3745-17-07 and 3745-17-08 are also applicable.

157. ARAR Tables, OAC 3745-21 It is not clear how these regulations apply to the circumstances listed in the analysis. In the revised analysis, discuss how these regulations are also applicable to the landfill gas vents.

158. ARAR Tables, Clean Water Act (ORC 6111) The table states there will be no discharges to surface water. These laws also apply to storm water discharges. Please revise the analysis to also address storm water discharges.

159. ARAR Tables, Water Quality ARARs. In the analysis of several water quality regulations cited in the ARAR tables, there is differentiation between Alternative 2 and Alternative 3 stating that the Quarry Pond may be drained prior to capping for Alternative 3. The extent of the solid waste cap is the same for both alternatives which specify that the unsubmerged north face of the Quarry Pond will be included in the cap. Please explain why the difference in design and why the rules would be applied differently to the two alternatives.

160. ARAR Tables, 40 CFR Part 81.34, and the state equivalent. This regulation is out-of-date and should be removed from the table since Montgomery County is in attainment for ozone.

161. ARAR Tables, ORC 5301. Please revise the analysis of this rule. An environmental covenant is an institutional control and would be part of the remedy. Also it is not clear what is meant by "as may be needed in future." Please clarify.

162. ARAR Tables, USEPA's Superfund Green Remediation Strategy and USEPA's Principles for Green Remediation. Whether the site is a brownfield and its continued use is not relevant to the green remediation strategy. In the revised ARAR analysis, discuss how guidance is relevant to other more appropriate strategies, such as clean diesel for trucks and heavy equipment at the Site.

163. ARAR Tables, ORC 3701.344-.347 and OAC 3701-28. Since there is public water supply well on-Site at the Valley Asphalt Plant, these Ohio Department of Health rules and regulations are applicable as ARARs. Please add them to the ARAR analysis table.

Table 2.4

164. Section 2.3 and 2.4 of the Streamlined OU-1 RI/FS Report (Report). Table 2.4 needs to be revised once Section 2.3 and 2.4 are revised to be consistent with the guidance appended to the ASAOC. The following comments are offered on Table 2.4 as currently provided in the Report. Due to time constraints, Ohio EPA was not able to address in the comments below all of the issues in Table 2.4 as presented in the Report. We expect revision of Table 2.4 following revisions of Sections 2.3 and 2.4 in accordance with the above comments will address any remaining issues not addressed in the comments below.

165. Table 2.4, Waste and Fill: The table needs to distinguish between low level threat waste and principal threat waste. As presented, collection and treatment technologies appropriate for principal threat waste are mixed in with containment technologies for low level threat waste. The technologies and process options for the low level threat waste should be based on containment and the process options for principal threat waste should be based on removal or treatment.

166. Table 2.4, Waste and Fill, No Action, Implementability: Delete "Not acceptable to Federal and State governments" and replace with "Not acceptable under the NCP."

167. Table 2.4, Waste and Fill, General Response Actions and Remedial Technology Types: The General Response Action "Collection/Treatment" and "Other Actions" overlap. In-Situ treatment is listed under "Other Actions" when it is clearly a treatment technology. "Discharge/Disposal" is listed as an "Other Action" when discharge (of what?) may or may not require treatment depending on what is being discharged.

168. Table 2.4, Waste and Fill, General Response Actions and Remedial Technology Types: "Other Actions" includes "Discharge/Disposal" with "On-Site Disposal" identified as the process option. Separate "Discharge" from "Disposal" and consider separately. Identify what type of waste is being considered for On-Site Disposal and what is being considered for discharge. Is the discharge of (what) On-Site or Off-Site? If both On- and Off-Site disposal is being considered for whatever the waste stream is, separate the two options (on- and off-Site).

169. Table 2.4, Waste and Fill, General Response Actions and Remedial Technology Types: "On-Site Disposal" is described under Effectiveness as "Not effective based on widespread presence of waste." What does this mean? Why is On-Site Disposal ineffective, and for what?

170. Table 2.4, Waste and Fill, Retained or Eliminated" column: Process options are screened using the statement "Eliminated – Other process options more effective." What other process options? In what way are the unidentified other process options more effective and why?

171. Table 2.4, Waste and Fill General Response Actions and Remedial Technology Types: "On-Site Disposal" is eliminated based on "Other process options more effective." What other process options? How are they more effective?

172. Table 2.4, Waste and Fill, General Response Actions and Remedial Technology Types: Under Implementability, "On-Site Disposal" is described as "Very low level of implementability." Why? Once the type waste being considered for On-Site Disposal is identified, revise the Implementability statement to describe why On-Site Disposal has a low level of implementability if that is the case.

173. Table 2.4, Waste and Fill, General Response Actions and Remedial Technology Types:

174. Table 2.4, Institutional Actions: Process options for institutional controls (zoning restrictions, deed/use restrictions, need to be separated out from process options for access restrictions

175. Table 2.4, Waste and Fill and Landfill Gas: Collection technologies should be separated out from treatment technologies. For example, SVE is a collection technology for principal threat waste and the collected vapors may or may not require treatment depending on ARARs. The type of treatment considered for SVE is depended on the volume and concentration of soil vapor collected by the system.

Attachment 1

Ohio EPA general comments on ARARs
For the Streamlined Remedial Investigation and Feasibility Study Report, Operable Unit 1 (OU1), South Dayton Dump and Landfill Site, Moraine, Ohio, January 2011, received February 2, 2011.
These comments were transmitted to USEPA on April 1, 2011

1) EPA Comment 113,
"113. Section 3.2, Screening of Alternatives, Pages 70 to 87, and Appendix C, ARAR, and Appendix D, Costs: The ARARs discussion and tables, both in the text and in Appendix C, are a confused mixture of ARARs and TBCs, none of which are held to be applicable when many are. Some ARARs are classified as TBCs when they are not. The ARARs must be separated from the TBCs (separate tables), and in the ARARs table, each ARAR must be identified as either applicable or relevant and appropriate, with an appropriate, defensible summary as to why (which must also be consistent with all previous FS comments)."
as well as Ohio EPA Comment 2,
"Currently ARARs and TBCs are jumbled together and generally misclassified and misapplied. Some ARARs are classified as TBCs; some TBCs are treated as applicable ARARs, and examples of both are included when they have nothing to do with the scope of the FS for OU 1.
- The ARARs need to be separated out from the TBCs (separate sections of the same table).
- The specific remedial component or process (not just the alternative #) affected by an ARAR or TCB needs to be clearly identified as does the specific rule or criteria affecting the component or process.
- Each ARAR needs to be classified as either applicable or relevant and appropriate with respect to the component or process. Presently none of the ARARs are held to be applicable when many are. "
have not been addressed.
In this revision, many ARARs which are applicable are listed as relevant and appropriate. And guidance is listed as relevant and appropriate when it should be TBC. The summaries of how the ARARs apply or not to the alternatives are inadequate and sometimes contradictory.

Tables 2.1, 2.2, 2.3, and Appendix E need to be combined and rewritten as a comprehensive table listing the ARAR, a description of the ARAR, whether it is applicable, or relevant and appropriate, or to be considered, what category it falls in,

and for each remedial alternative, the affected remedial component and how will the component meet or not meet which specific rule or criteria of the ARAR or TBC.

2) ARAR tables 2.1, 2.2, and 2.3 and Appendix E are long and confusing, and comparable state and federal rules are not applied consistently. Most of the state ARARs apply to programs that have been delegated to the state from the federal government. Including both the state and federal rules and regulations is unnecessarily redundant. According to EPA OSWER Publication 9234.2-05/FS, December 1989, CERCLA Compliance with State Requirements guidance,

"EPA believes that if a State is authorized to implement a program in lieu of a Federal agency, State laws arising out of that program constitute the ARARs instead of the Federal authorizing legislation. A stringency comparison is unnecessary because State regulations under Federally authorized programs are considered to be Federal requirements."

For this reason, the Federal ARARs that are duplicative of State ARARs should be removed from ARAR list. A list of Federal ARARs that can be removed is:

40 CFR Part 6
40 CFR 61
40 CFR Part 81
40 CFR Part 122
40 CFR Part 125
40 CFR Part 141
40 CFR Part 261
40 CFR Part 264
40 CFR Part 262
40 CFR Part 267
40 CFR Part 268
49 CFR Part 171
40 CFR Part 257
40 CFR Part 403
Clean Water Act
Safe Drinking Water Act
Solid Waste Disposal Act, 42 U.S.C. 6901

3) The ARAR list should include only those requirements that are ARARs. If rules or regulations are not applicable, or relevant and appropriate, they should not be included

in the tables. For example, for OAC 3745-76-03, it is stated that this regulation does not apply because of the demonstration that NMOC emissions will be less than 50 Mg/year, so this regulation should not be included in the table. Other ARARS would apply to OU2 components, i.e. groundwater quality, but not OU1. Please delete those ARARs that are "not applicable" for any of the three OU1 remedy alternatives.

4) City of Moraine storm water management ordinances should be listed as TBCs.

5) U.S. EPA and Ohio EPA are still in the process of reviewing the FS. Concurrent with that review, U.S. EPA has initiated a series of three party conference calls (U.S. EPA, Ohio EPA, and the PRP group and consultants) to expedite revision of the FS as agency review progresses. Some elements of the alternatives under evaluation remain vague (how potential hot spots will be handled, for example) and Ohio EPA reserves the right to identify additional ARARs and/or revisit existing ARARs once the final configuration of the alternatives is established.